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VOL 8 1957 2/- MARCH

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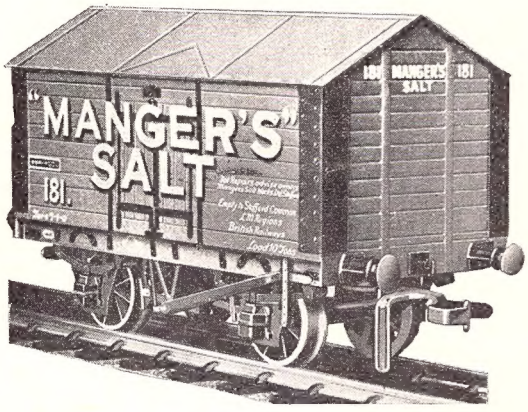

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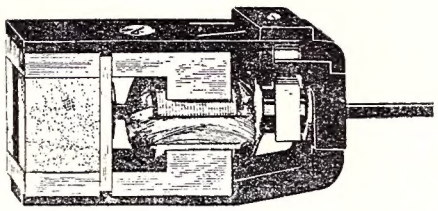

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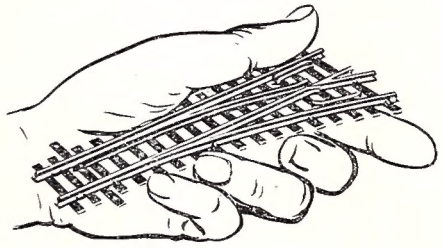

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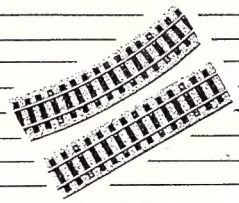
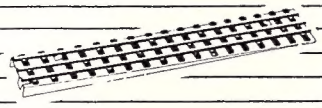
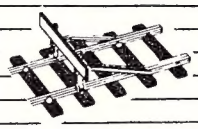

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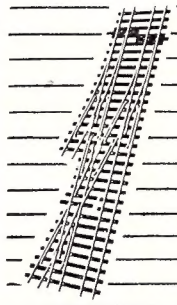
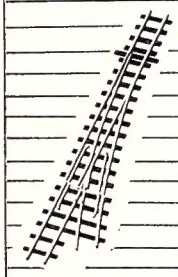
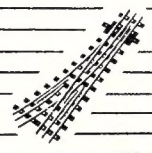

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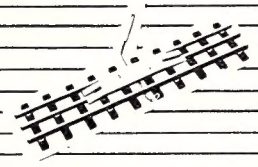

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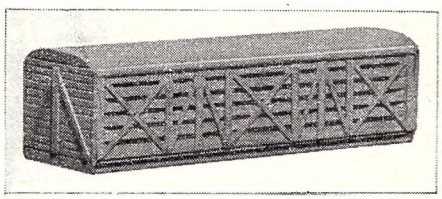

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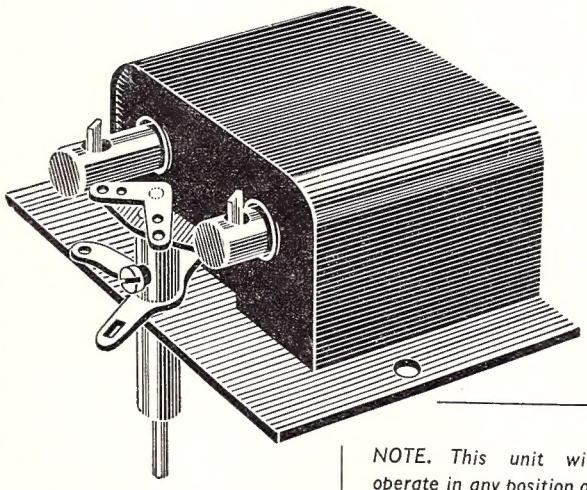

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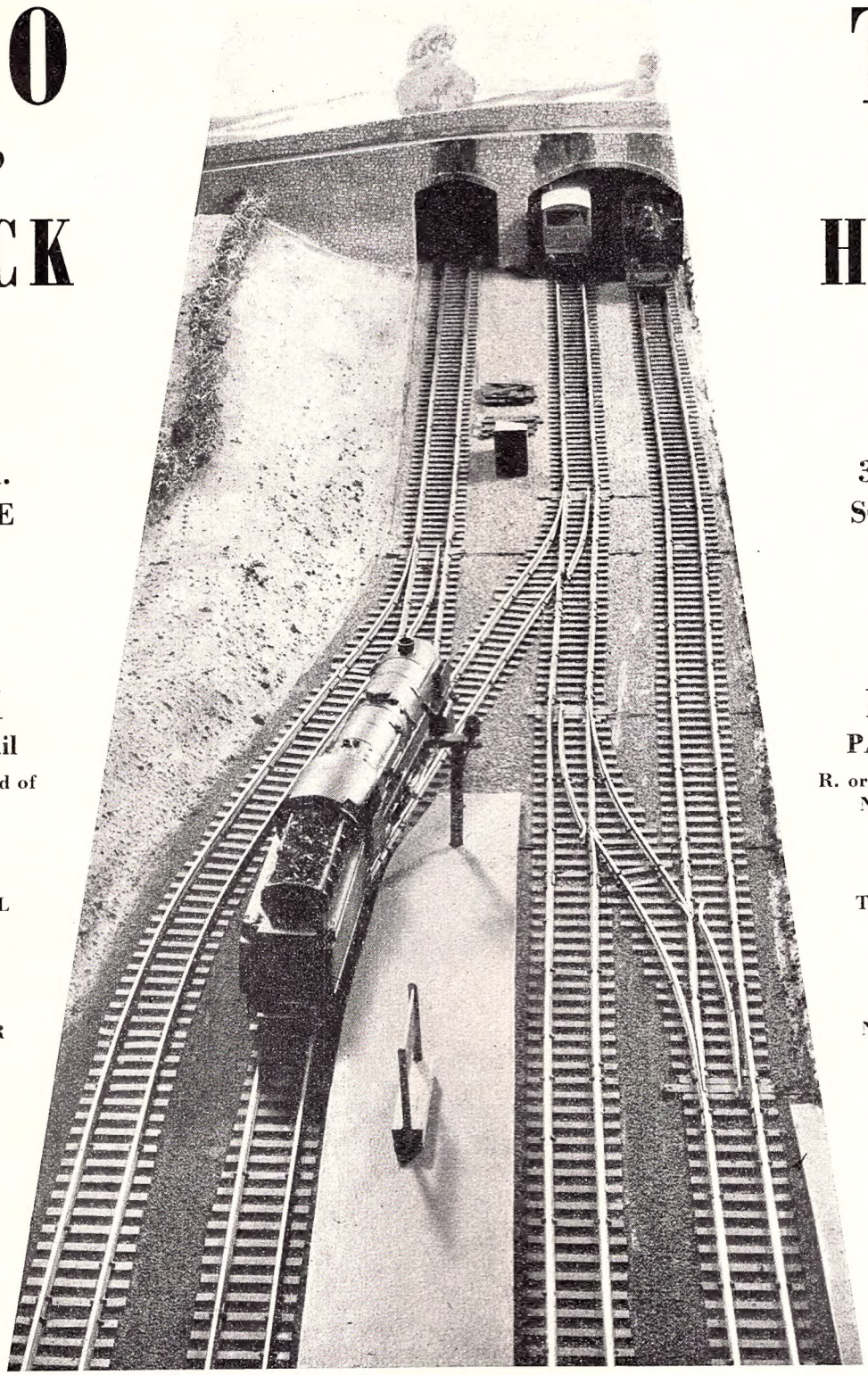

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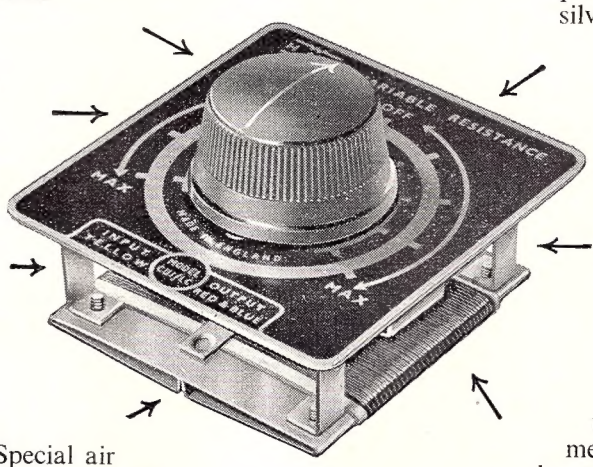

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RAILWAY MODELLER

Specializing in Small-scale Railway Modelling

The Lobby

"TT" IS HERE! This is indeed no small news, for a new scale and train system is not born every day. We are proud to be able to give, at this early date, a full illustrated preview of the new products, thanks to the closest co-operation of the manufacturers concerned. Because of the importance of the subject, and the fact that many of our readers have long been wanting a practical commercial system smaller than "OO," we are devoting no less than six pages in this issue to giving as much information as is possible at this stage, and needless to say we shall in future also be including articles and reviews covering this scale in our pages.

"TT" has a track gauge of 12mm., and two-rail pickup, 12 volts D.C., is an accepted international standard. However, for reasons we explain on page 58, commercial models of British prototypes have to be built to a scale somewhat larger than the theoretical figure. Tri-ang's choice, 3mm. to the foot, differs but little from our earlier recommendation of one-ninth scale, and has the additional advantage that it is a particularly easy scale in which to work, as 1in. on the prototype is represented by ⅓mm. on the model, this being about the smallest division one can readily see with the naked eye.

It is probable therefore that the majority of modellers will follow suit, and adopt these new and very practical standards, for, indeed, this will undoubtedly save a great deal of bother for the average enthusiast, who is probably more intent on getting a railway running than anything else, particularly in this size. However, there are already other standards in use, and remembering the dreadful confusion that arose some thirty years ago when "OO" was first mooted, simply because no differentiation was made between 3.5 and 4mm. scales, we should like to recommend strongly that this new scale—for new it is, though the gauge has been established many years—receives a distinctive title. In our opinion the easiest solution is to term the scale "TT-3," thus keeping the well-known gauge letters intact, but clearly indicating in addition the scale being used. In this manner those who wish can adopt the new 3mm. scale without prejudice to those who insist on an exact scale-gauge ratio, in which case we suggest that they make a similar distinction—e.g. "TT-25" for 2.5mm. scale. In any case, we shall in future use these distinctions ourselves.

Of course, the adoption of more than one scale on any one gauge is nothing new. Apart from "OO" and "HO," we would instance the case of "O," where the scale in Britain is 7mm. but ¼in. in the U.S.A., while in Gauge "1" both 10mm. and ⅜in. scale are happily used in this country. As long as it is possible to distinguish between the scales no trouble need arise.

Readers will be interested to know that our distinguished and popular French contemporary *Loco Revue* has also changed its format to virtually the same as the RAILWAY MODELLER. There is no doubt that this size is accepted as ideal for our subject, since the leading publications catering for the average enthusiast in America, France and Britain are now all of the same size.

CONTENTS Vol. 8, No. 77

RAILWAY OF THE MONTH
Simphill-by-Sea 50

DO IT YOURSELF
The Story of Two "Bulldogs" 54
Panelling Coaches 56

R.M. Special Feature !

"TT" IS HERE !
The Story to Date 58
Tri-ang "TT" 59
And Scale Tracks Too ... 61
Other Products 63
In Conclusion 63

PROTOTYPE
B.R. Standard Class 6 4-6-2 64
B.R. Standard Class 4 4-6-0 64
Dingwall 65

JUNIOR MODELLER
Littlemoss Boys' School Layout 66
Junior Do-it-yourself ... 67

REGULAR FEATURES
Readers' Letters 68
Personality Parade 70
Club Notice Board 70
Trade Window 71
Book Reviews 72

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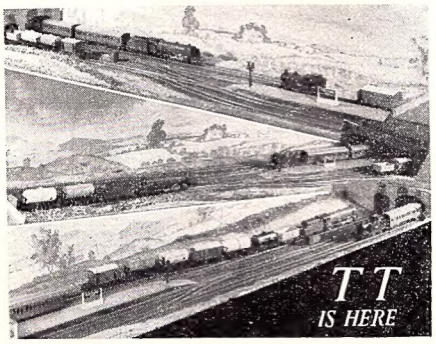

COVER PICTURE

We spent many fascinating hours building the small "TT" demonstration layout which forms our cover subject—indeed, we found it so much fun that it was hard to get back to work!

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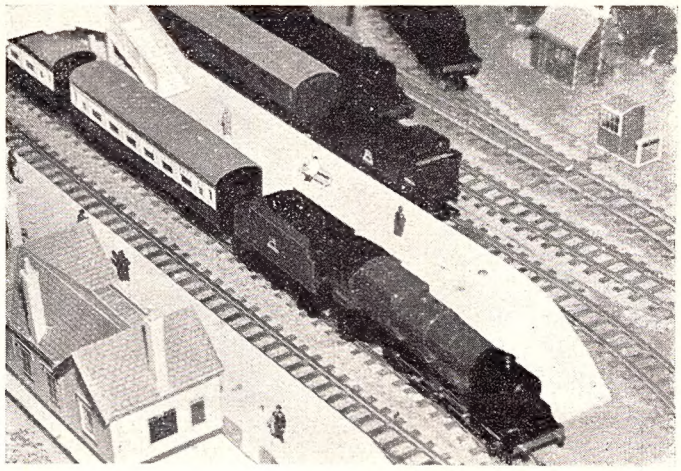
Railway of the Month

SIMPHILL-BY-SEA



by D. E. Carder

An unusual "OO" gauge railway, where the accent is on operation and automatic control with simplified equipment, plus a convincing scenic picture built up from standard components.

THIS layout was designed to give scope for future developments, illusion as to distances and number of trains in operation, and both point-to-point and continuous operation. Electrically the system is 12-volt D.C., two-rail, split potential, and the five existing sections are wired to switches which are so arranged that any section can be switched to either of the two main controllers and the terminal section at Simphill (and future new termini) can also be switched to one or the other of two auxiliary controllers.

Uncouplers and turnout motors are operated by 10-volt A.C. and lighting by 3.5- and 12-volt A.C. and 12-volt D.C. according to purpose. Supplies of 6-, 16- and 20-volt A.C. are also available for any other purposes that may arise.

To enable my small children to operate part of the system, and so that continuous trains can be operated while the operator is otherwise engaged on shunting, etc., the working of the main continuous layout has been simplified and made automatic to a great extent.

Slowing sections have been arranged by using simple resistances at the through lines of the two stations and trains automatically slow and stop if the turnouts and signals are against.

A D.P.D.T. switch has been incorporated, which by the one movement transfers all sections on controller A to controller B and vice versa (all the main continuous-line sections having already been set to one or the other of these two controllers). The layout being basically a continuous circle, single line, with passing loops at opposite sides, it will be appreciated that half the layout is on one controller and the other half on the second controller and that the two-pole switch has the effect of complete polarity reversal of all the continuous track provided the two main controllers are in opposite phase.

The pressing of a single button (a) sets turnout correct to leave station, (b) lowers signal, (c) puts power on to the track in station through turnout blades. At a later date (b) and (c) will have a delayed action through the use of thermal delay switches —when time can be found for such refinements!

Having en route operated a solenoid which has reversed the actions previously put into operation by the press button, the train automatically slows and comes to rest in the next station.

The polarity reversal switch is now operated and another button will start it off again. A separate press button is used for each train in each station and two trains can be operated at the same time in opposite directions.

All the slowing sections (and later the thermal delay switches) can be individually or severally short-circuited and the polarity reversing switch need not be used if full control is desired through the controllers.

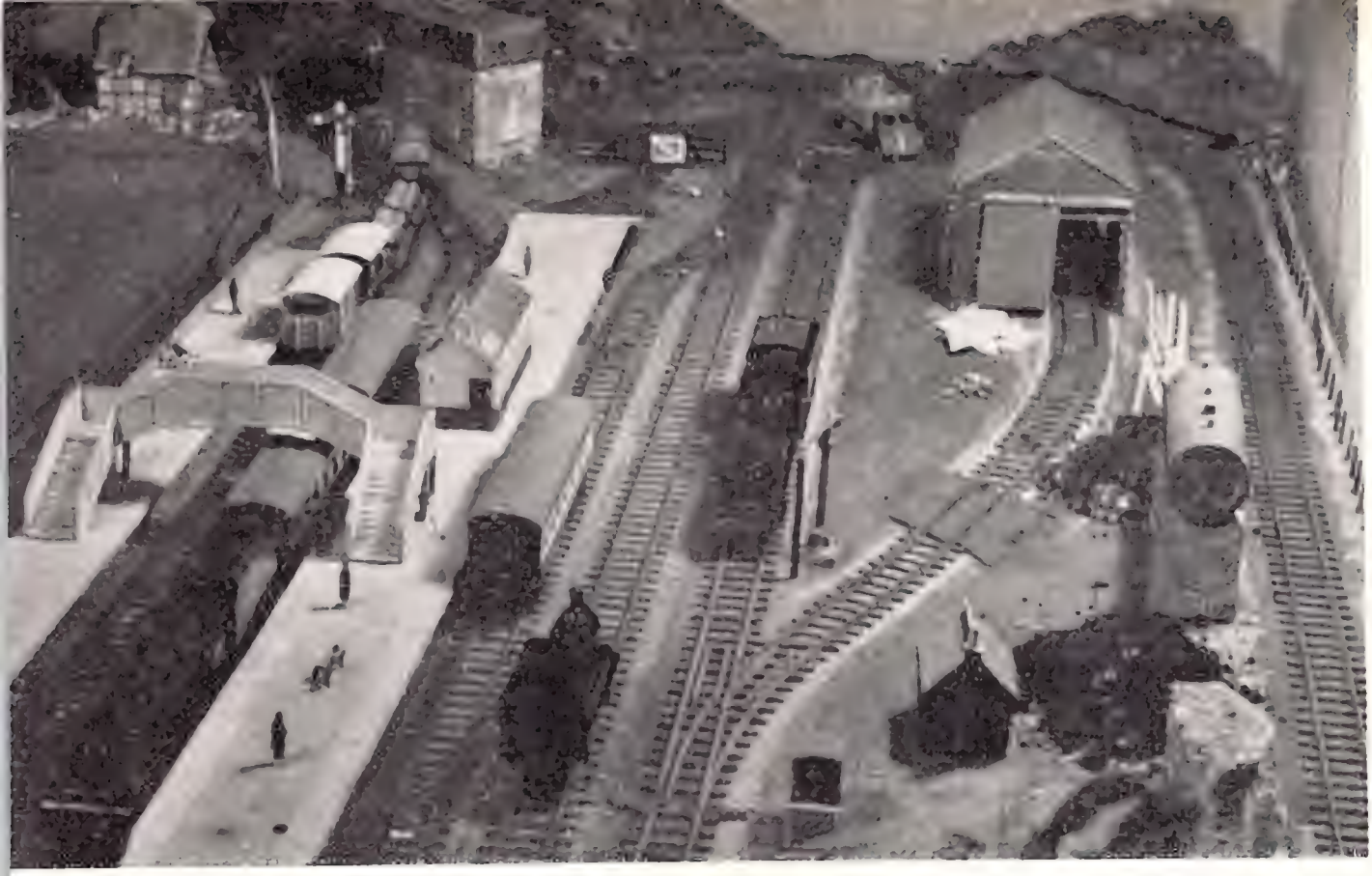
Of the eleven turnouts so far in operation, all but two are worked by electric motors, these two still being worked manually—for which, incidentally, I have found nylon fishing cord working on a stiff lever excellent for the job, as it has a certain elasticity and is easily adjusted if and when necessary; the original fittings take about five minutes to fix. The electric point motors are worked by press contact switches and in addition the turnouts at each end of the passing sections in both main stations are worked one way only by the trains en route, thereby ensuring safety and considerably reducing the operator's duties.

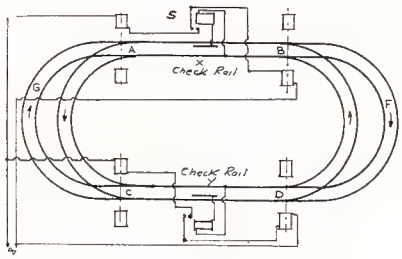
The method used is best explained with the use of a simple diagram. An engine travelling from G to F completes an electrical circuit through the check rail X, which causes the small solenoid S to operate a relay which in turn completes a circuit to operate turnout B for our train to proceed on to line F. A similar circuit is also operated by this relay, which changes turnout A against traffic on line G so that a following train stops at G.

A similar procedure operates turnouts C and D through a check rail at Y. The use of a separate circuit and solenoid to operate the relay is due to the turnouts being operated on 20-volt A.C., whereas the power supply is 12-volt D.C., and as the same transformer is the source of supply for both I am unable to use the common rail for the A.C.

The uncouplers are rough and ready, but do at least work. They consist of nar-

Top right: general view of Simphill-by-Sea. Bottom right: part of village as seen from Dunawide Vale station, with "Olga" doing the disappearing trick. Below: A few Bilteezi buildings and an artistic touch make this effective scenic picture.





Automatic control circuits.

row strips of shaped box-binding metal bent at right-angles so that part passes through a slot in the baseboard. This lower part is then attracted by a solenoid, causing the upper part to lift—easily made and easily adjusted and in no way unsightly. When the solenoid is switched off the metal strip falls back into " off " position by gravity. The solenoids were obtained from ex-government stores for sixpence each. As a matter of interest I have used two to work a turnout and am in the course of constructing another " motor " with two more.

All sidings are supplied with power through the turnout blades, which practice, so far, has caused very little trouble indeed, whereas it has greatly reduced the wiring and the control board operations, apart from rendering trains " safe " if turnouts are wrongly set.

The length of track from point to point can be extended by the judicious use of the continuous track, and runs of quite a reasonable length can be made, as a study of the plan will show. Trains disappear into various tunnels and reappear at unexpected exits, being held out of sight if so desired.

This, together with the apparent complete change of direction over the central bridge, gives the illusion of more trains and of non-continuous running.

The unusual flyovers, themselves completely hidden in tunnels, with country scenes and buildings above, have created a vertical height in parts as much as eighteen inches from rooftop to lower baseboard (which latter is of hardboard).

Although complete in itself at the present operative stage, extensions are being added and plans for still more are being made.

At the moment the layout consists of three large sections measuring approximately 7ft. by 4ft., which can each be carried by two people, and two smaller sections, one about 3ft. by 4ft. and the other 3ft. square. There is a separate control board standing on its own legs which also contains the transformer units, but its operations are gradually being replaced by a new portable control board.

The layout as a whole is designed to stand about one foot clear above a double bed. Where the baseboard sections join together the tracks are connected by sliding fishplates, which complete the electrical circuits for power supply. Work is still being done on the portable control board (almost an electronic brain to look at) and it is connected to the main switchboard by multiple-cored flex.

With regard to the scenery the main theme has been to obtain a general overall effect rather than to specialize.

The movable parts of the scenery are mainly of wood and plaster of paris and the more permanently fixed parts are of varying mixtures of plaster of paris and/or sawdust and/or papier mâché in conjunction with hardboard and/or balsa wood according to local requirements. The undergrowth, shrubs, etc., are again a mixture, consisting of dried seaweed, sea fern, loofah sponge, crepe rubber (from tube), wire wool and both green and brown flock, etc., all of which have their advantages and disadvantages. For painting I have found a well-shaken-up mixture of ordinary dark green oil paint (household) and a water paint of a lighter shade of green most satisfactory. Being of oil and water bases they do not truly mix, and the resulting paint consists of millions of pin-points of alternating shades, which create a realistic basic effect. Shades of brown, gold and black are added with a paint-brush stub where needed.

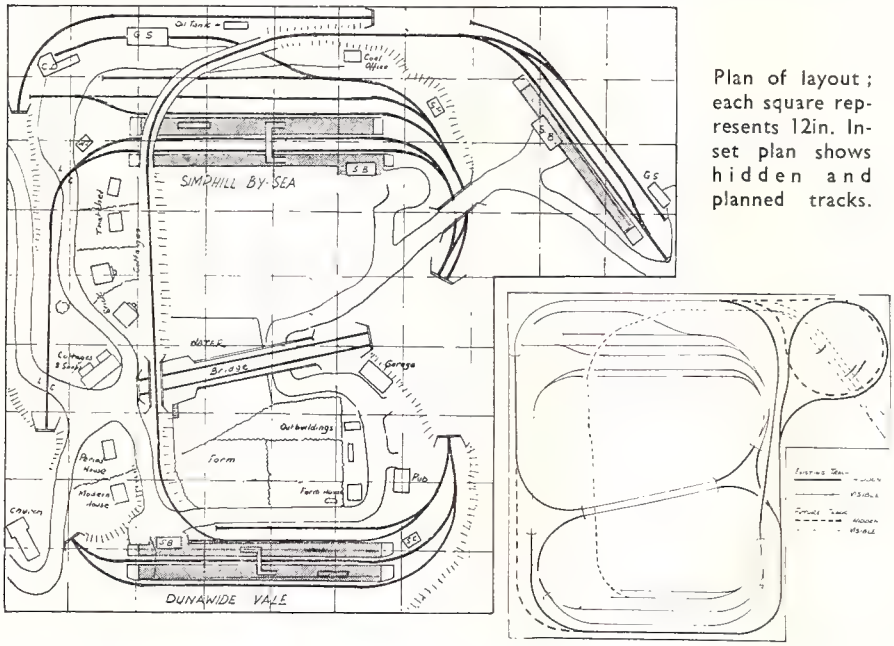
The plaster of paris is mixed with dyed water, mainly emerald or jade green or brown according to the basic nature of the terrain in hand.

Some reasonable trees have been made with wire base coated with Pyruma for trunk and branches, to which have been added loofah sponge and dyed sawdust. Experiments with gorse and heather dipped in shellac and dusted with green flock have also proved quite successful.

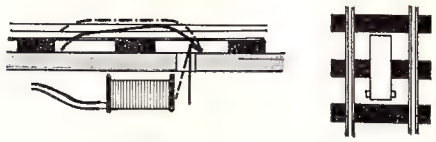
Most of the buildings, both Bilteezi and my own creations, have lights, certain windows being cut out while others are left blacked out. Some of these lights are switched off and on by the trains themselves in the course of operation in an attempt to make the layout " live " as well as to serve the purpose of telling the operator which way concealed turnouts are switched.

Gradients are steep—the steepest is one in twenty-four—and trains are limited to four main-line coaches. An extra eighteen inches in the overall length of the baseboard would have been a good thing, as the gradients could then have been made less severe. On the other hand, as the passing loops in the stations, and the platforms, are only large enough to accommodate four coaches and engine, and as the layout is basically intended to be of the country type, longer trains would not be strictly in keeping and the steep gradients do not appear to be so out of place. The extra eighteen inches could not well be afforded in the available space without sacrificing the floor space allowed for the " audience," and would have meant curtailing some of the planned extensions.

Finally, permit me to say that I am no expert and am no artist; neither can I speak with any authority whatsoever on railway matters. This is my first attempt at model work and much that I have done will horrify the experts; and as for technical terms, I am completely in the dark, as the absence of any in this article will prove. However, I would like this layout to serve as an encouragement to other beginners, for I know there are many who, like myself, desire a layout that works and has an overall appearance of reality without worrying about whether the engine castings have the correct number of rivets, etc. No one needs a magnifying glass to find the faults on my layout—they stand out clearly enough.



Plan of layout; each square represents 12in. Inset plan shows hidden and planned tracks.



Uncoupling ramp.

Top right: the approaches at the signal-box end of Simphill-by-Sea. Bottom right: Dunawide village, with church in background.

Photos by J. Brooksbank.

THE STORY OF TWO "BULLDOGS"

by A. S. Taylor

Drawings by Eric Longbottom

Being the detailed description of the construction of a super-detailed prize-winning pair of 4mm. scale models.

(continued from page 31, February issue)

SMOKEBOX DOOR

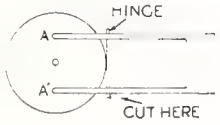


Fig. 18. Smokebox door hinges.

To deal with the problem of strap hinges the following procedure was adopted. A "U"-shaped piece of nickel silver was cut out, the two arms being finished to the same width as the straps and correctly spaced for position on the door. They were cut about twice the length of the finished strap and the base of the "U" gave a firm hold for soldering in position on the door. The hinges were now attached as one unit, thus preventing A from falling off when the iron was subsequently applied to A^1. A piece of No. 70 wire was now soldered to the backs of A and A^1 and the surplus metal cut off. The tiny overlap was bent round the wire upright, thus completing the hinge.

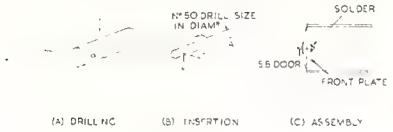
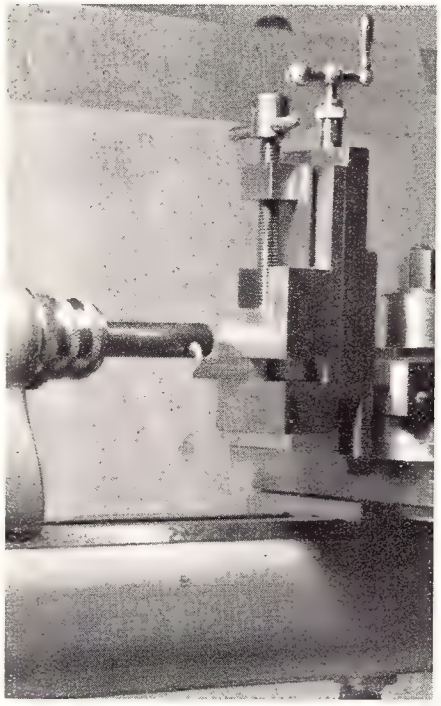


Fig. 19. Smokebox door darts.

To make the dart assembly, a piece of 1/16in. brass rod was drilled No. 70 at the two points shown. It was then turned to shape, the shank A at the rear being turned to pass through the No. 50 hole in the smoke door and the front smokebox plate. The darts consist of tapered lengths of No. 70 wire pushed hard into their holes and sweated in position. The completed dart assembly was first inserted through the smokebox door, and then through the No. 50 hole in the front plate of the smokebox, thereafter being soldered at the point B. Thus the door is held in position without tiresome soldering around its perimeter.

At this point we had completed the three main components, and it was now necessary to assemble these as one unit. With the aid of a piercing saw a cut-out was made in the bottom rear position of the cone boiler to accommodate the motor while the lower parts of the firebox were shaped to lie over the splashers.

The smokebox and boiler were united



Flycutting in the lathe.

by means of the protruding ring, access to this being obtained via the cut-out in the cone boiler. The rear end of the boiler was carefully positioned on the front plate of the firebox and a temporary solder tack made. It was then checked for alignment, solder was run round, the joint carefully cleaned up and the remaining boiler band sweated on hard up against the firebox front.

The next step was to mark out the positions of the handrail knobs and washout plugs. The boiler was packed underneath the smokebox until it stood in a perfectly level position on a sheet of glass. The pointer of a scribing block was next set to the height of first the handrail knobs and then the washout plugs, and with its base resting on the same sheet of glass it was drawn along the unit, placing a light line in the correct position. In this way the marking was identical on both sides, and level with the base. It was now a simple task to plot the individual positions of the washout plugs and handrail knobs, taking the distances from the blueprint with a pair of dividers. Holes were drilled to take these fittings, the washout plugs being Beeson products, beautifully made with correct square inserts. Handrail knobs are in effect small cotter-pins made from half-round steel wire bent to shape round the shank of a No. 70 drill, the size used for the handrails. All these items were soldered into position on the inside of the body and the handrail was itself shaped and fitted.

BOILER MOUNTINGS

To complete the boiler unit it was now necessary to deal with the provision of a chimney and a top-feed. One of the chief difficulties with these items is to secure a neat and accurate seating on the boiler casing, and with this end in view we made use of a flycutter.

Before the "scooping" operations could take place, however, it was necessary to secure the work in the toolpost of the lathe, and to provide some means of keeping the centre of the cylinders dead in line with the axis of the lathe. Consequently the simple jig illustrated was fabricated.

Fig. 20. Boiler mounting jig.

A 2in. length of ¼in. square brass bar was taken and mounted in the tool post parallel to the face of the chuck. A small Slocombe centre drill was held firmly in the chuck jaws. The slide was now advanced towards the chuck, allowing the drill to penetrate the bar at the exact centre height of the lathe. The Slocombe was now replaced by a No. 40 drill (for 5 B.A. tapping) and the hole continued for about three-quarters of the way through the bar. It was now removed and tapped 5 B.A., and a 5 B.A. steel bolt about ½in. long was inserted and screwed tightly home and the head of the bolt was removed, leaving a projection of about ⅛in. of thread at exactly centre height.

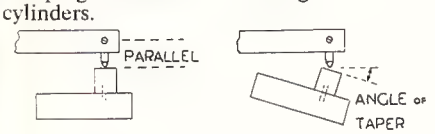
The two "cylinders" were cut from ½in. diameter brass rod and were left about ⅛in. longer than the total height of the individual mounting to allow for final trimming. They were drilled No. 40 (right

Fig. 21, Milling mounting blanks.

through) in the lathe and tapped 5 B.A. at either end, this being easier than attempting to go right through with the tap in one long cut. It will now be seen that a cylinder can be tightly screwed home on to the jig and must of necessity be presented to the cutter at correct centre height.

CHIMNEY

With a cylinder securely in position on the jig, and the face absolutely parallel to the silver-steel shaft of the flycutter (ensured by advancing the slide until the face of the cylinder rested square on the body of the flycutters), the tool was set to the radius of the smokebox and scooping commenced, the slide being traversed from side to side and advanced at each new depth of cut. This operation continued until the scooping reached the edges of the cylinders.



(A) CHIMNEY (B) TOP FEED

Fig. 22. Setting the jig.

TOP FEED

Having screwed on the other cylinder, and set the jig parallel as for the chimney, the diagram will show that it is necessary to set the top slide out of parallel with the lathe axis by the angle of taper at the top of the cone boiler. Now this is almost impossible to determine accurately by measurement, and in consequence we set the slide to an estimated angle and took a trial cut. With the jig still firmly clamped

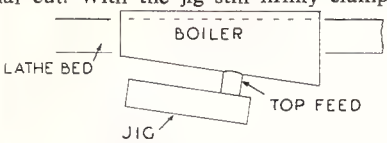


Fig. 23. Checking top feed mounting for correct angle.

in the tool post, the boiler was offered to the trial cut—the bottom of the boiler should be parallel with the lathe bed when the angle is correct. Adjustments were made until this was the case and, once the angle was accurately established, milling proceeded, as with the chimney. The cylinder should now sit correctly on the boiler with its sides truly vertical. Note that in setting the cutter to mill out the tapered seat the radius of the boiler at the smaller end of the mounting should be the one employed.

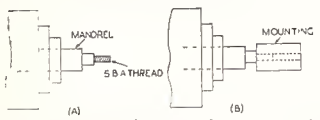
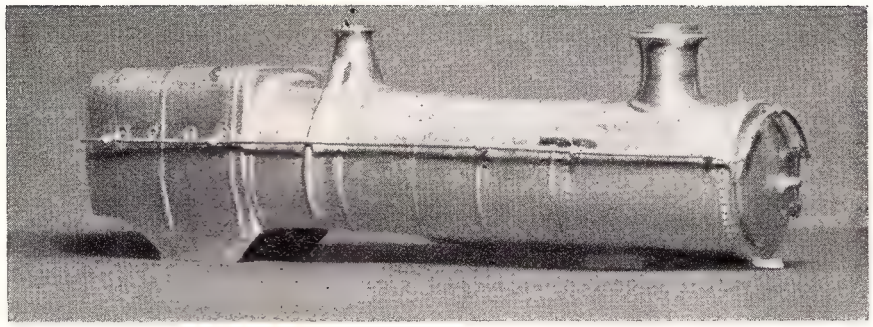


Fig. 24. Mandrel for turning mountings.

Having now secured the correct seating for our two mountings, a 5 B.A. mandrel was turned up in the lathe so that the



The boiler unit complete with mountings.

cylinders could be screwed on to this for turning to profile. The mountings were then individually shaped.

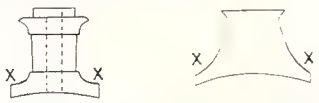


Fig. 25. Cleaning up mountings.

It was now necessary in each instance to file away the ridge marked X, and to do this round- and oval-shaped needle files were employed. Some care is needed in this operation to avoid biting into the body of the mounting. Sufficient thread was left in the bottom of each turning to allow for replacement on the small mandrel so that the filed-out portions could be polished with emery paper and any file-marks obliterated.

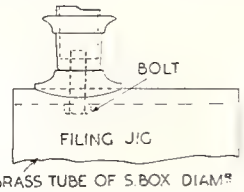


Fig. 26. Filing jig for mountings.

The operation of finishing these flanges was greatly facilitated by securing the chimney on to a stout length of brass tube turned to the diameter of the smokebox, attachment being by means of a 5 B.A. bolt screwing up from underneath into the thread already cut on the mounting. This prevents the flanges breaking under pressure of filing.

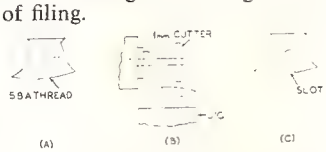


Fig. 27. Cutting S.V. casing to take top feed.

I must now return to the top feed. It will be noted that the 5 B.A. thread still existed therein on the bottom portions and extended about halfway up the mounting. The turning was now taken and replaced in its original position on the milling jig. A 1mm. milling cutter, the one used for fluting our coupling rods, was now placed in the chuck and the work truly centred to it. The slide was now advanced and a slot cut in the tapered sides of the top feed casing to accommodate the lower position of this fitting.

The lower portions of the top feed came from a length of brass curtain valance rail—about an inch of this was cut off and held in the tool post at the same angle

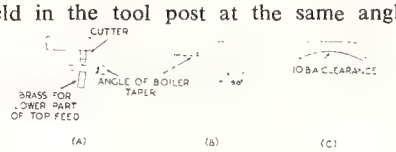


Fig. 28. Top feed details.

as the taper of the boiler. The rail was then scooped out in the usual way, giving a tapered cut, and when placed in its correct position on the boiler the sides remained vertical. It was then marked out to the final external shape, rounded off along the edges with a file, and emery-papered to a good finish. A 10 B.A. clearance hole was next drilled vertically through the centre of the fitting.

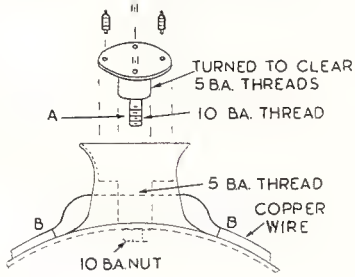


Fig. 29. Safety valve and top feed assembly.

It now became possible to sweat together the two main components and to finish the turning a small detail into which four tiny valves fitted was constructed. The exploded diagram of this best illustrates this step. The end of the shank A has a 10 B.A. thread and passes through a hole in the boiler, while the whole mounting is secured by means of an internal 10 B.A. nut. A touch of solder on this nut is an additional measure of security. Soft copper wire was used to represent the piping running down the side of the boiler, and this butts up against the lower half of the top feed at B. It was soldered at this point and cleaned off neatly.

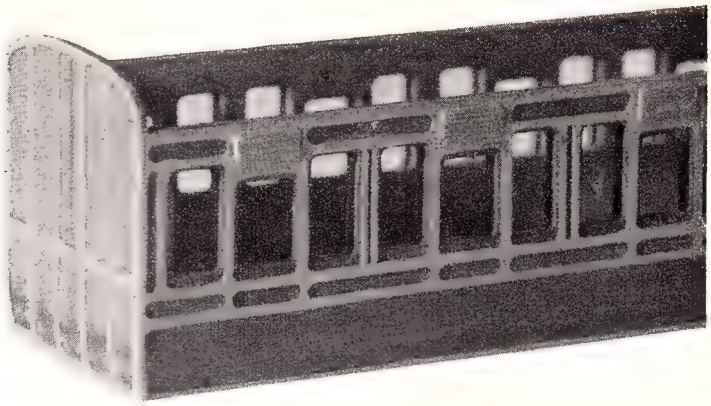
The chimney was sweated in position, once more using Fryolux, and the screwed portions that remained were finally opened out with the chimney in position.

Thus our two main components, the boiler units and the firebox assembly, were completed, and the time had arrived when they could be united to form the completed body.

(To be continued)

DO IT YOURSELF, No. 15

PANELLING COACHES



by C. E. Newell

SUNKEN-PANELLED coaches have a charm of their own, and make very attractive models. One way of achieving the effect is to use narrow strips of paper, gumstrip, Sellotape or what have you, and to rely on subsequent coats of paint to provide a radius at the corners, but to my mind the radius thus produced is barely sufficient.

If, on the other hand, the mouldings are to be cut in one piece, permitting the use of radiused corners, the difficulty is to mark the overlay so as to get an accurate register with the windows in the coach side.

I therefore give details of my method of panelling 4mm. coaches, with two alternative means of marking out, one before the body is built and the other after.

Obviously such a coach takes longer to build than a flush-sided effort, but I feel that the extra work is not out of proportion to the result.

My previous efforts, and the one used for the present example, were carried out on Ratio kits, but the method would be applicable to other types of construction having cut-out windows.

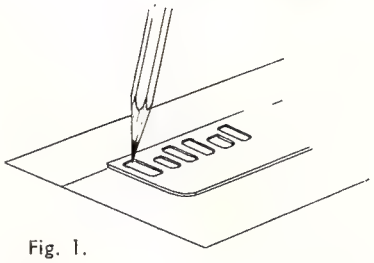


Fig. 1.

Some care in selecting the card for the overlays will save an awful amount of exasperation during operation. The card should be close and firm, and not more than .007in. thick. This is about .002in. thicker than scale $\frac{3}{8}$in., but the extra .002in. gives just that extra strength when cutting out. I have found a thin office record card suitable.

For the first method of marking out, before making up the body of the coach, take the sides and, laying them outside down on the card to a line parallel with one edge, mark round the outside and window openings with a 4H finely pointed pencil. Keep the pencil firmly pressed into the angle formed by the card and coach side (Fig. 1).

Then mark an extra line 1mm. from each end as in Fig. 2a. This is to allow for the thickness of the ends, which in Ratio kits are built on to the sides. If the ends are to be placed between the sides omit these extra lines.

From the appropriate drawing mark in the lines separating the panels, leaving the mouldings around .75mm. wide (see Fig. 2b, in which the original pencil lines have been rubbed out for clearness).

Do not cut out the panels at this stage, as they are not applied until the body is built, and if the somewhat delicate tracery is left lying around it is liable to become damaged, and so is your temper! For the sake of continuity, however, Fig. 2c shows the cutting completed.

Now go ahead and construct the body of the coach, clean everything up and mark a vertical centre line on each end, carrying these lines round to the underside of the floor and inside the ends as in Fig. 3.

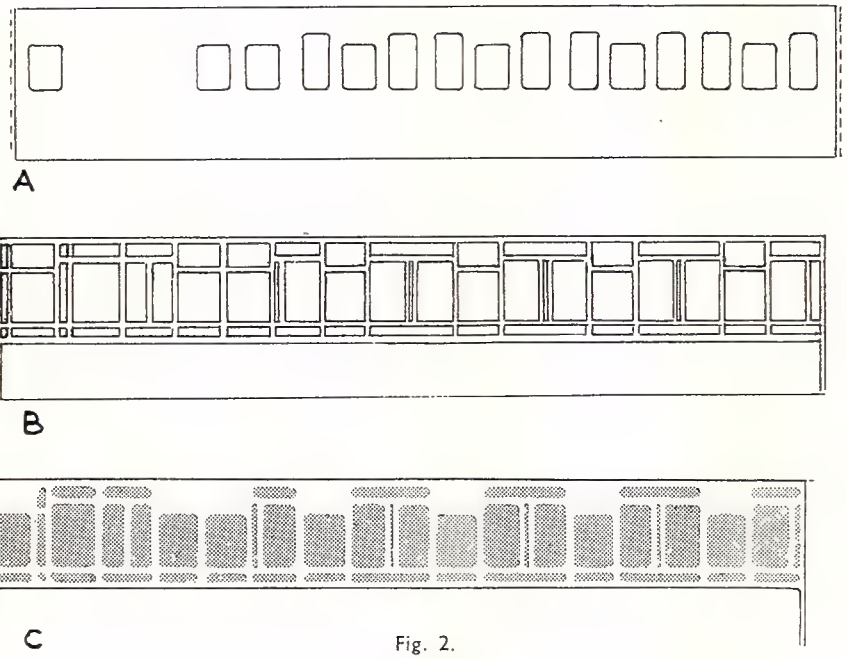


Fig. 2.

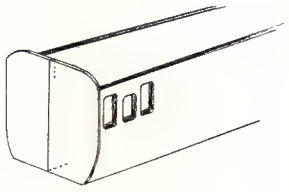
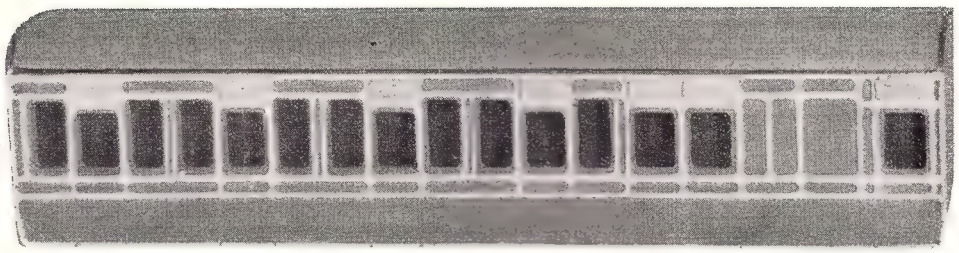


Fig. 3.

Next refer to Fig. 4. Square off a vertical line on the card as at A and, placing the end of the coach so that the centre line coincides with this vertical, mark round the end with aforesaid sharp pencil, thus producing B. From the drawing mark in the panels, most of which can be done with a square, and you have C.

The next job is to punch the corners and join them with straight-edge and knife. Leave about $\frac{1}{8}$in. all round the out-



The panelled body before painting.

side. This helps to keep the overlay firm while sticking down (see D).

The punches are made from 3in.—4in. lengths of silver-steel rod. 1mm., 1.5mm. and 2mm. diameter are useful sizes. File a bevel at one end, leaving a half-round end section, and nibble away at this bevel with rat-tail needle file until a half-round cutting edge is obtained. Hardening and tempering will greatly prolong the life of the edge (Fig. 5).

Punching is best done on a piece of hardboard. Anything much softer will result in distortion as the punch breaks through.

Using a watercolour brush, apply office gum to the body and overlay, and leaving the latter flat on the table place the end of coach on same. The original outline will just show all round and will ensure that the moulding at the edge is of regular width. The inner mouldings can then be pressed down and adjusted if necessary before the gum sets.

When the gum is really hard (preferably next day), the applied beading can be trimmed flush with the sides, coated with shellac and rubbed lightly with fine worn glasspaper to remove any whiskers.

The second method of marking the sides is carried out at this stage, and is one which gives the exact position and size of windows and outline.

Paint one side of the card with indian ink, and then coat the side of the coach thinly with white paint, or preferably printing ink, using a small squeegee roller.

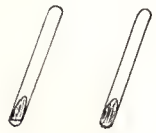


Fig. 5.

Be sure to mark a line parallel to the edge of the card and lay the coach to this when "printing" (Fig. 6). Wash the paint off the coach before it dries, otherwise subsequent sticking may be adversely affected. If the card is laid on a sheet of rubber a clearer impression will be obtained. The marking of the mouldings then proceeds as in the first method. All vertical lines can be marked in with a small square.

The cutting of the side overlays can now be put in hand along the same lines as the ends. Do not forget to leave in the panels over the doors, which makes the fitting of louvres easier.

The moulding along the bottom of the body is best applied as a separate strip. After sticking the overlay to the body and allowing to dry thoroughly the waste is removed and the whole given a coat of shellac and lightly rubbed down as for the ends.

The louvres over the doors are the usual narrow strips of gumstrip overlapped half their width. The corners are trimmed with the knife.

That completes the work on the panelling. The fitting of handles, commode rails and other attachments may now be carried out by the worker's favourite method.

I have found that there is a limit to the length that can be applied in one piece, not from the point of view of cutting and marking, but of working within the drying time of the gum. I have done a 34ft. six-wheeler in one piece, and where the design includes a lookout this automatically breaks the coach into two. For longer coaches it is possible to cut the overlay into two or more pieces, and as long as the gum is wet each piece can be slid up to its neighbour quite successfully.

A final word about the knife. This must be very sharp, and do not try to cut through the card in one go.

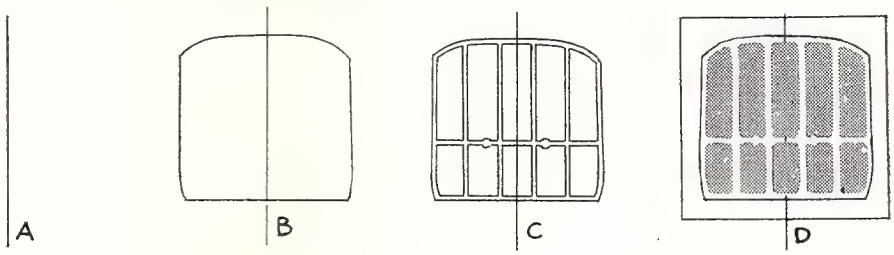


Fig. 4.

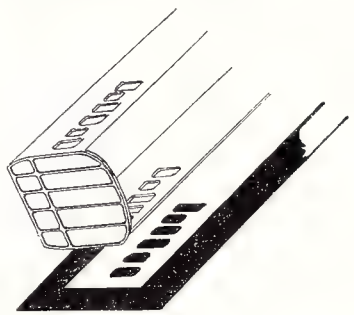
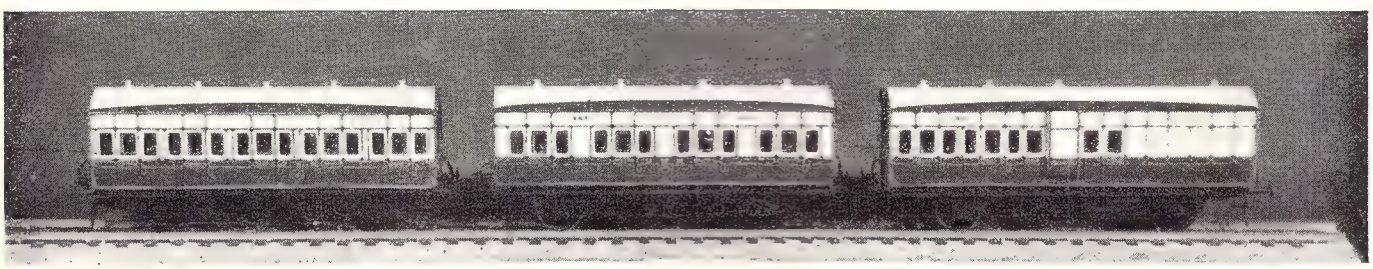
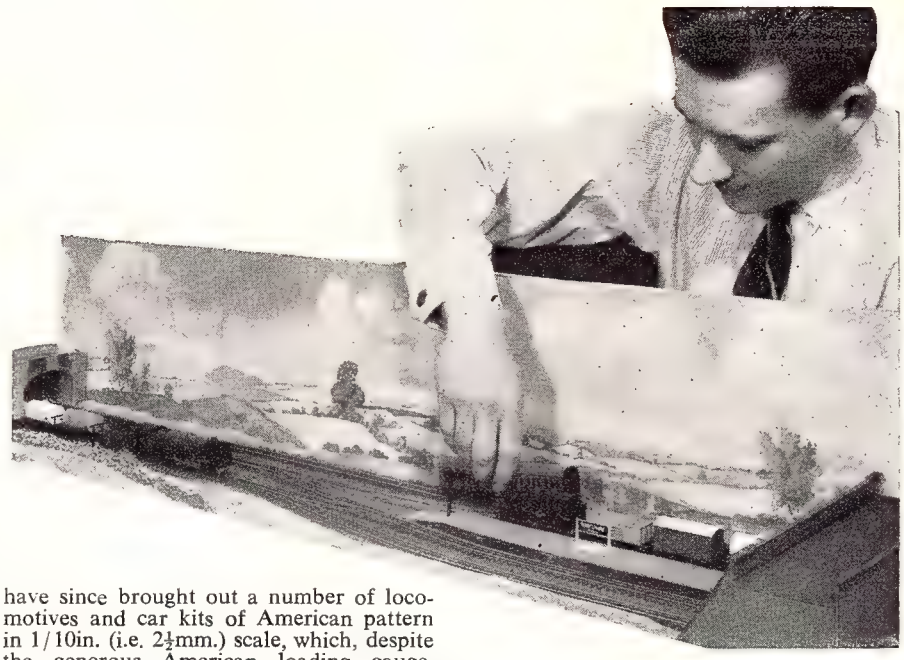


Fig. 6.

A rake of G.W.R. panelled four-wheel coaches.

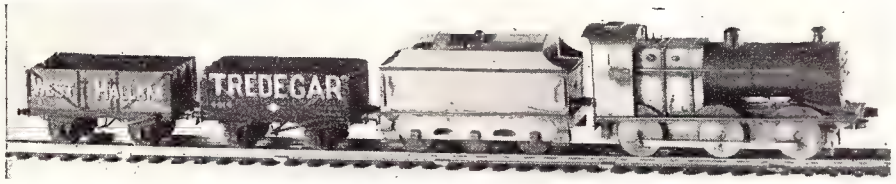


TT IS HERE!



THE STORY TO DATE

THE idea of an ultra-miniature railway system first occurred in the 1930s, but the original proposition, "OOO" (2mm. scale), is just too tiny for general adoption. As a result the slightly larger scale of 2½mm. on 12 mm. gauge track was tried. Mr. S. C. Pritchard, together with other enthusiasts, was largely responsible for these early experiments, and we illustrate below an unpainted 4F 0-6-0 and two 2½mm. scale private-owner wagons of that period. These experiments demonstrated clearly two things, first that this gauge was a practical one, second that due to the very restricted loading gauge in Britain the 2½mm. scale was not wholly practicable for models of British rolling stock. We believe that our more experienced readers are fully aware that it is essential to use wheels with overscale treads and flanges if successful running is



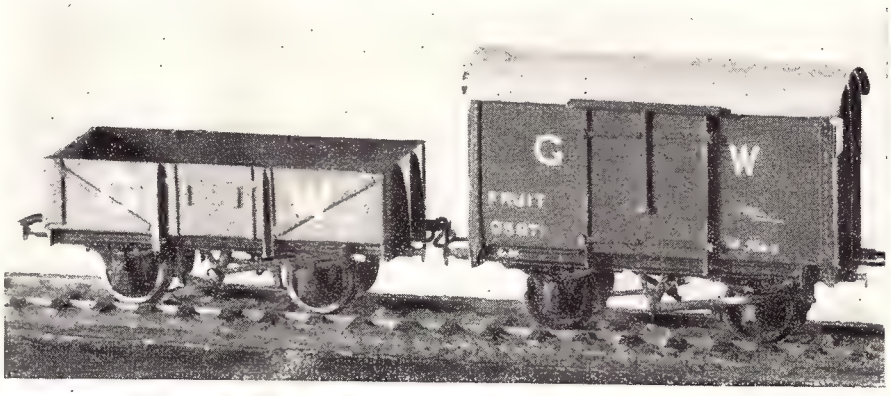
to be achieved. This overscale effect must in fact be increased the smaller one goes, because a miniature railway is not just a reduction of the prototype, but a railway in its own right, running on its own track gauge, and obviously the wheels and track must be designed in relation with each other. There is, of course, a practical minimum to which one can work. We cannot lay track more accurately in a small size than in a larger, for a normal baseboard is constructed on a wooden frame which can vary considerably under normal atmospheric conditions. In 2½mm. scale as little as ¼mm. is nearly 1¼in. full size, and one can imagine the dire results that would follow if prototype track were this far out of alignment.

To overcome this difficulty we must use wider-than-scale wheels with deeper-than-scale flanges, but even when keeping these increases to the bare minimum wider wheels on 12mm. gauge 2½mm. scale must result in axleboxes being well outside the solebars! The easiest way out of this problem is to move out the solebars to suit, and to maintain correct proportions this must mean a larger scale.

Shortly after the war "TT" was introduced in America by H.P. Products, who have since brought out a number of locomotives and car kits of American pattern in 1/10in. (i.e. 2½mm.) scale, which, despite the generous American loading gauge, brings bogie frames almost to the edge of the rolling stock. A little later "TT" was also introduced on the Continent by way of the Rokal train sets. Here, despite the larger continental loading gauge, it was found necessary to increase the scale slightly. These products became available on the British market and as a result fresh interest was aroused. We accordingly revived our experiments to determine a scale which would produce a practical working British "TT" railway, matching the American and continental products size for size, which would also enable standard "OO" motors to be used to power the locomotives. The second pair of wagons illustrated were built to a scale of 1/9in. to the foot as a result of our findings. We are very happy to find that the scale adopted by Tri-ang corresponds so closely to our own recommendations, being only slightly larger than the size we had envisaged. The "B.R. Pacific" in our cover illustration is a modified standard Rokal German locomotive, which, as will be seen, admirably matches the Tri-ang products size for size.

On the introduction of Rokal, Peco produced Minilay "TT" track, which has been used by keen modellers as a basis for "TT" layouts. From time to time we have illustrated examples, and in particular we could mention that of the Leeds Model Railway Club, which has for several years been developing an elaborate "TT" system based on a portion of the Chester and Holyhead route of the London Midland Region.

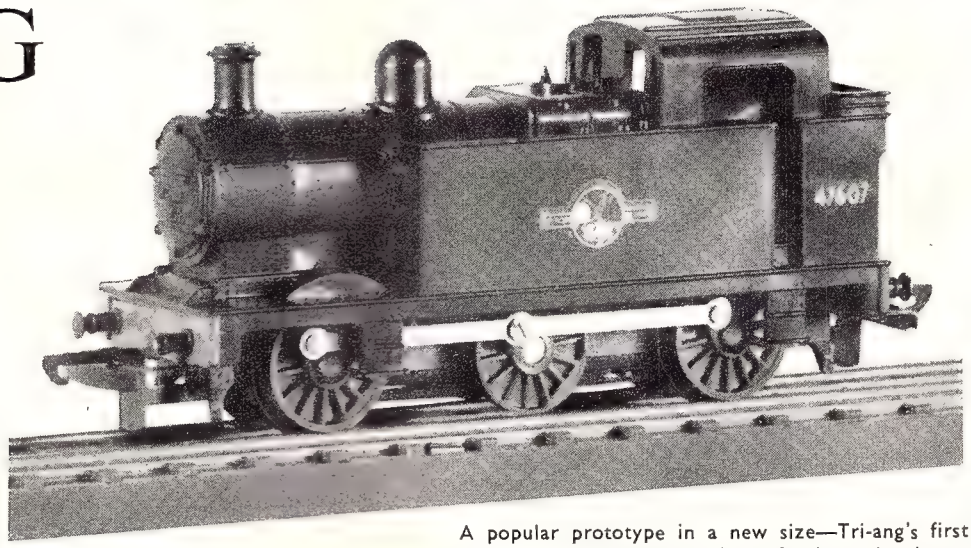
Despite the encouragement given to the scale when the first Rokal equipment became available some five years ago, the new size never developed here to any extent. This was mainly due to the absence of ready-made British-style locomotives, rolling stock and accessories. This state of affairs is now at an end, and the introduction of the Tri-ang "TT" trains gives us a clear start in what is in every respect a new scale.



TRI-ANG TT

"TT-3" to us!

A new size—a new scale! "TT-3," as explained in the editorial, is 3mm. scale on 12mm. track, and produces the smallest railway models commercially available in Britain.



A popular prototype in a new size—Tri-ang's first "TT" locomotive, the L.M.R. 0-6-0, as handsome and powerful as its bigger brother.

For some little time now, we in the model railway world have known that a new size of Proprietary train was to be launched by Tri-ang. Last month at the Toy Fair the secret was unveiled—"TT" is the size with a 12mm. track gauge, and two complete train sets, a passenger and goods, were shown. Through the co-operation and personal assistance of Mr. Richard Lines we are able to give readers at this early date a preview of what will be available in the immediate future, and some details of Tri-ang's forthcoming programme.

It is not often that we can say we have inspected an entire range of what is essentially a toy railway system but which meets the more exacting demands of the scale modeller almost without exception. The Tri-ang "TT" system comes into this rare but satisfying class. Our principal attention, and doubtless that of our readers, was focused on the locomotive, for here one is concerned not only with appearance but with performance. In this respect we have nothing but praise. The motor is completely new and forms part of a six-coupled mechanism. The armature is the same size as in their "OO" motor, the result being an extremely powerful mechanism, the operation of which is every bit as good as that of their well-known "OO" gauge products. Like them, it operates on 12 volts D.C., with two-rail pickup.

As can be seen from the photograph, the locomotive is our old and popular friend the L.M.R. 0-6-0T, and what better could one have for a start? The second locomotive promised breaks fresh ground, for it is to be a W.R. "Castle." This locomotive and the accompanying main-line coaches, which will be finished in the new British Railways maroon livery, should be available by October, which means that it will be coming on the market just as those modellers who adopt "TT" will be completing the initial stages of their layouts.

The rolling stock, which is to be available soon, includes a compo and brake second suburban coach set and a British Railways goods brake on a long wheelbase, which seems to herald the arrival of further long-wheelbase chassis vehicles.

The Tri-ang "TT" box van.

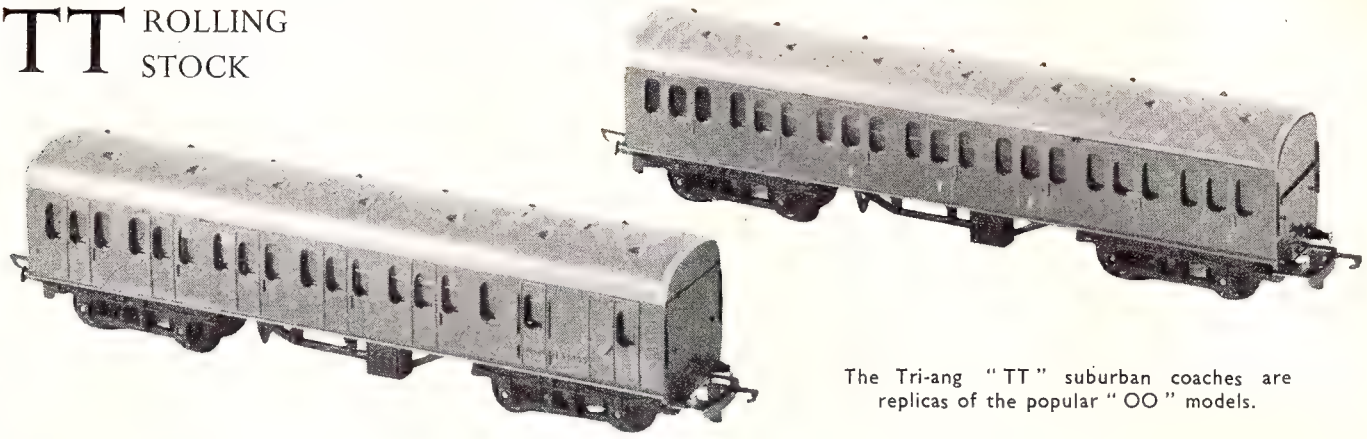
British Railways pattern 16-ton mineral open and box vans are also included, with a selection of private-owner oil tank wagons and a U.D. milk tank complete with ladder. The chassis are die-cast throughout, the bodies being moulded in plastic. It is a very simple matter to slip the existing bodies off the chassis, so that anyone wishing to use either component for other purposes may do so.

The coupling is a modification of the hook and bar pattern used in "OO." Our older readers will recognize it as a variant of the Lanal, although in actual fact it is identical in action with A. R. Walkley's original auto-coupler. It utilizes a spring ramp for its operation and the diagrams show clearly the action of the uncoupler when passing over the ramp. When the train is being pulled a notch in the hook engages in a projection on the buffing plate, thus preventing the hook from rising, the strikers accordingly depressing the lightly sprung ramp. In addition, this catch arrangement reduces to a negligible factor the risk of uncoupling while the train is in motion. When the vehicles are pushed across the ramp the hooks are disengaged and the spring ramp is able to lift them clear of the buffing bar. If the train is stopped and reversed while one pair of couplers is directly over the ramp, the train will naturally be split at this point, as the hooks no longer engage, but complete coupling can take place by passing over the ramp, for as long as the train is being pushed the couplings will re-engage on the other side of the unit. With the couplings correctly adjusted, operation is completely infallible on the Tri-ang ramp, while the whole coupling is robust.

We have only been able so far to inspect samples of the straight and curved tracks. These are built on basically the

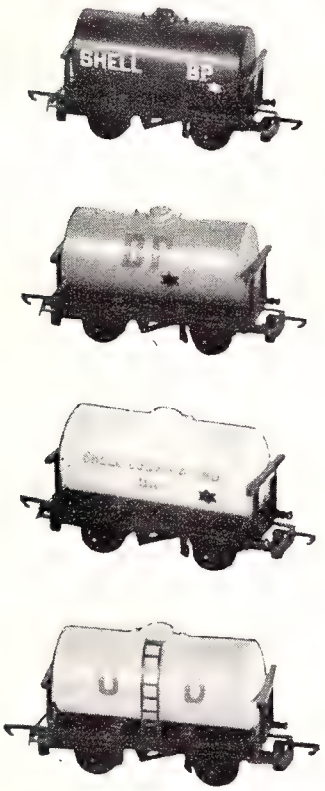
All stations with the Tri-ang "TT" two-coach suburban train finished in B.R. red.

TT ROLLING STOCK



The Tri-ang "TT" suburban coaches are replicas of the popular "OO" models.

A collection of "TT" tank wagons.



same principle as the well-known "OO" Tri-ang track; indeed, they use the same section rail sunk deeply into the sleepers. The standard track is one-foot radius and eight curved sections go to make up a complete circle. Points, both hand and automatic, are designed and will be in production later this year. Half-curved sections will be produced, and a *small* radius curve of $10\frac{3}{16}$in. radius for laying inside the standard curve for double track. We expect that in due course the entire range of track formations at present available for "OO" will be also available in "TT."

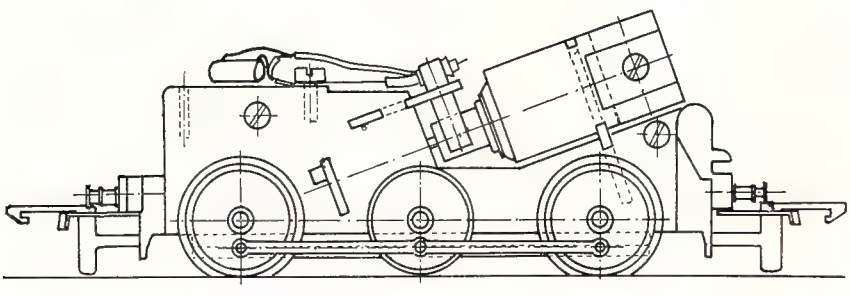
A selection of buildings of modern design, including stations, signal-box, engine shed, plus platforms and other accessories, will be available towards the end of the summer. These again are in plastic and will doubtless be of the same quality of detail and general attractiveness as the existing "OO" models.

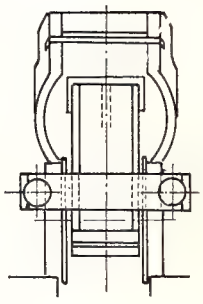
For those modellers who may wish to build their own locomotives on the standard Tri-ang chassis, the mechanism is shown in the actual-size elevations published on these pages. Points not clearly brought out by the diagrams are that the sideframes are cut from hard sheet brass, secured to a die-cast central spacer with large screws. The wheels are held in place by a plastic two-piece keeper plate, which incorporates the spring pick-up. Two lugs are provided on the rear of the locomotive to engage in the holes in the body moulding, and a 10 B.A. tapped hole takes the screw through the locomotive funnel. The chassis incorporates the buffer beam and coupling and television suppressors are fitted. As usual the central wheels are flangeless and made of plastic, and the outer wheels are of metal and bushed for insulation on the left-hand side. The spokes are only partially embossed. The motor is set high for the existing wheels, and it therefore suggests to us that still further locomotive types are envisaged.

We would mention in passing that for those interested in "OOn3" gauge this mechanism would make an excellent chassis for any 4mm. scale six-coupled three-foot-gauge locomotive. Indeed, with but a few minor modifications to the body, principally the provision of a Belpaire firebox, the mechanism will fit into a 4mm. model of the I.O.M. Railway "Caledonia," a drawing of which was published in the March 1956 RAILWAY MODELLER.

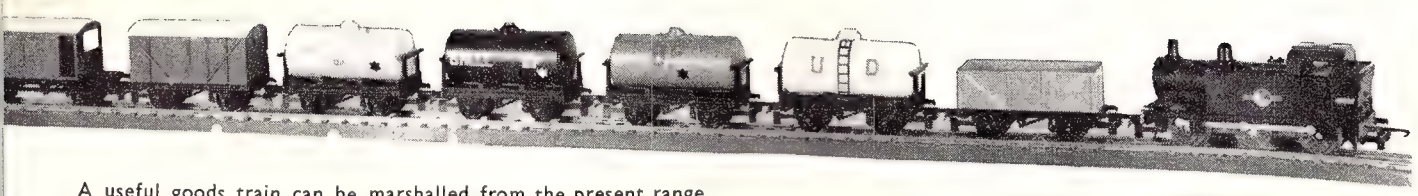
The wheel standards adopted by Tri-ang are given in the accompanying table, and it will be seen that they correspond very closely to scale "OO," falling halfway between the very fine N.M.R.A. "TT" standard wheels and the coarse Rokal wheels. They have a well-proportioned profile and we feel sure will prove wholly acceptable to the average modeller, while at the same time providing another wheel for the "OO" modeller.

There remains but one point to add. The Tri-ang "TT" equipment was, as we said before, shown at the Toy Fair last month, when the initial orders were taken, and therefore some patience may have to be exercised, as a little time must elapse before supplies are plentiful. But one thing is certain: Tri-ang "TT" is here to stay and will be developed as fully as their "OO" system.

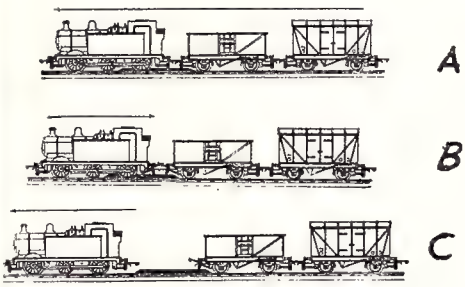




FULL-SIZE ELEVATIONS OF TRI-ANG "TT" GAUGE CHASSIS



A useful goods train can be marshalled from the present range.



THE TRI-ANG "TT" UNCOUPLER

A. Pulling, the couplings depress the ramps and remain coupled.

B. Pushing, the spring ramp lifts the coupling hooks clear of the loops.

C. If the locomotive is reversed it will now draw clear, leaving the vehicle on the ramp. To recouple, the train is pushed clear of the ramp, whereupon the couplings will re-engage and the train can be pulled away as in A.

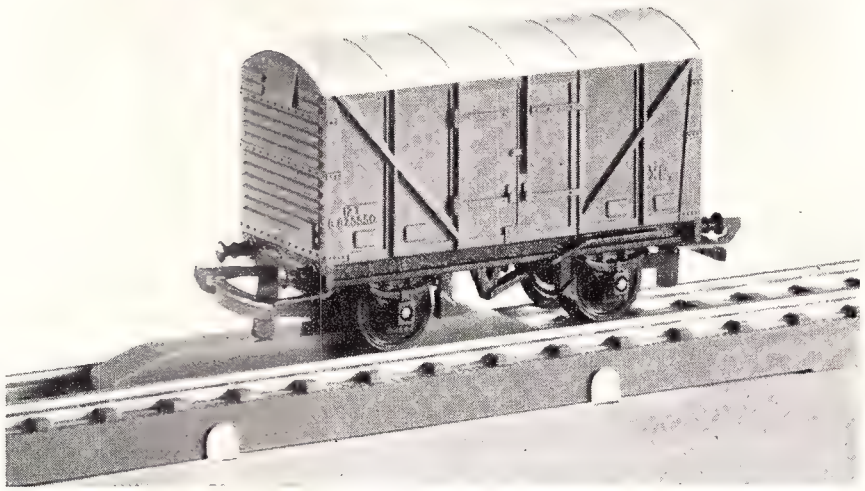
TRI-ANG "TT" STANDARDS

Track gauge ..... 12mm.
Scale 3mm.=1ft.
Back-to-back ..... 10mm.
Wheel thickness 2.75mm.
Flange thickness 0.5mm.
Flange depth ... 0.75mm.

Mineral wagon (16T) in "TT."

The "TT" brake van.

The photograph alongside shows the box van on the ramp, and gives a clear picture not only of the coupling but also of the detail in the wagons and track. The reproduction is, of course, well over actual size!



AND SCALE TRACKS TOO

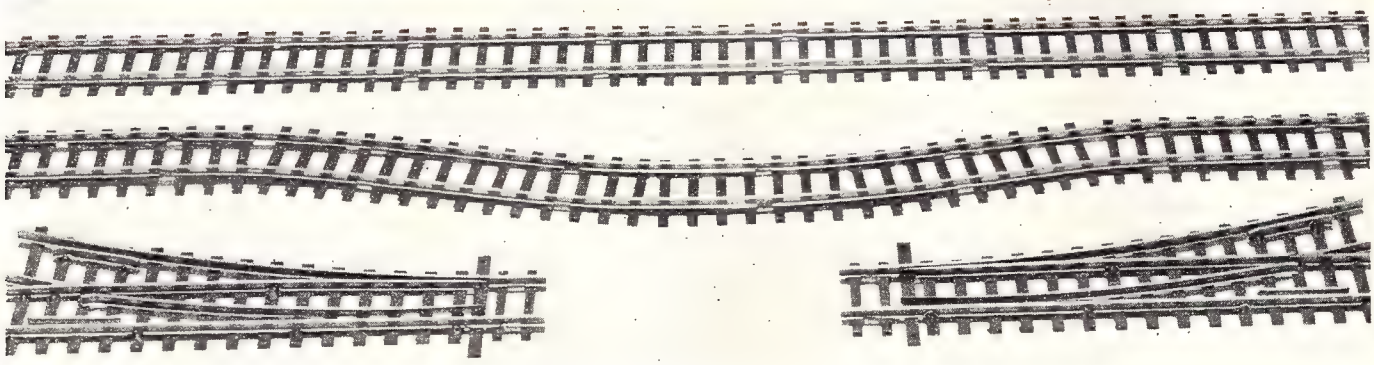
Two leading manufacturers, Peco and Gem, have been working on "TT" projects for some little time, and have therefore been able to go into immediate production with the all-essential commodity to enable enthusiasts to model in "TT-3"—universal scale track. This is indeed excellent news, for there is now nothing to stop us making a start. We can plan in full confidence that supplies will be freely available. Furthermore, both tracks have been designed for use with the Tri-ang product, incorporating a high-section rail, the points being built on the universal principle. We have thus arrived at a high degree of standardization, which is highly encouraging. The rail employed is none other than the true scale "OO" section, which again means further standardization. The photographs show that, in spite of the rail being overscale for "TT-3," the appearance in no way suffers, due to the sleepers being scaled to match the rail.

Gem "TT-3" Flexitrak, ready-assembled track, is identical in principle with their well-known "OO" Flexitrak. The rail section is the true-scale "OO" section in nickel silver mounted on a tied sleeper strip punched from $\frac{1}{32}$in. thick fibre. The track is available in 18in. lengths and costs 7s. 6d. per yard. The points are 15in. radius, measuring 4½in. overall, a crossover being 8½in. over point blades with track centres at 1½in., and cost 12s. 6d.

Peco Spiked "TT-3" Track, the "Do-It-Yourself" system, is again exactly similar in principle to their "OO" gauge Spiked Track, utilizing Rediflex sleeper units 4½in. long, and is supplied in the new convenient one-yard packs at 4s. each steel and 5s. 6d. nickel silver. The points are available in complete pack form and are priced at 7s. 6d. steel and 8s. 6d. nickel silver, producing 19in. radius points 5in. long, which together make a crossover measuring 9½in. over point blades with tracks at 1⅝in. centres.

Both tracks, employing a $\frac{1}{32}$in. thick sleeper base, can be used together without difficulty, while all accessories—ballast and ballast underlays, fixing spikes, rail joiners, fishplates, etc.—are standard. Indeed, the existing scale "OO" fittings are employed. There is, of course, no difference whatever in tracklaying technique or baseboard construction. The methods used so successfully in "OO" should be followed, for it is, after all, only the gauge that differs! For this, Peco are introducing a "TT" Rologauge, together with sleeper strip for home construction of special point formations not covered by standard turnouts.

While on the subject of "TT-3" products, some people may consider that the smaller size should be cheaper, but material costs are negligible; it is the labour that counts and this is the same, or even higher the smaller one goes (consider watches), for smaller articles often have to cost more due to the higher precision needed. We would like to point out that, taking track as an example, it is the number of sleepers per yard that you are buying, so that in effect a yard of "TT-3" track compared with a yard of "OO" is



Gem " TT-3 " FLEXITRAK and points.

considerably cheaper. While it represents only 228.6 feet in 4mm. scale, in 3mm. it covers no less than 304.8 scale feet!

This increase in scale length also affects layout planning, but the same principles that have been used with success in " OO " gauge modelling can be followed. Indeed, by taking each foot on a " OO " plan for 9in., a satisfactory " TT-3 " scheme can be arrived at provided no narrow gangways and operating wells are involved, for one needs at least 2ft. for a " squeeze through " gangway and 2ft. 6in. for an operating well, no matter what the scale. Similarly, the overall widths of baseboards are calculated on the average reach of the modeller, so in " TT-3 " one can, if one has the space, build a proportionately wider basebard while retaining the full advantage of easy access and maintenance.

The fact that " TT-3 " offers the chance of laying a really large prototype yard in a reasonable model area is of greater ultimate significance than any immediate advantage in small-space layouts. Most modellers begin by admiring main-line working; indeed the whole trend towards the branch has been fostered simply because in the average room it has rarely been possible to model more with reasonable fidelity.

The plan on the facing page shows, in an area measuring 10ft. x 8ft., a generalized replica of Temple Meads station, Bristol. It is, of course, far from being a faithful copy in every respect; one island platform is missing, the old station is slightly out of position, the goods sidings are completely out of place and the pointwork is nothing like the original, for we set ourselves the restriction of using only standard turnouts, and barred diamonds, as these are not yet commercially available. There is, of course, no reason why the individual modeller who likes tracklaying should not attempt special pointwork, but we would advise against the wholesale incorporation of three-way points, double slips and scissor crossovers, for these things will not be made any the easier by the reduction to 12mm. You can do far more on paper in this respect than you can in practice.

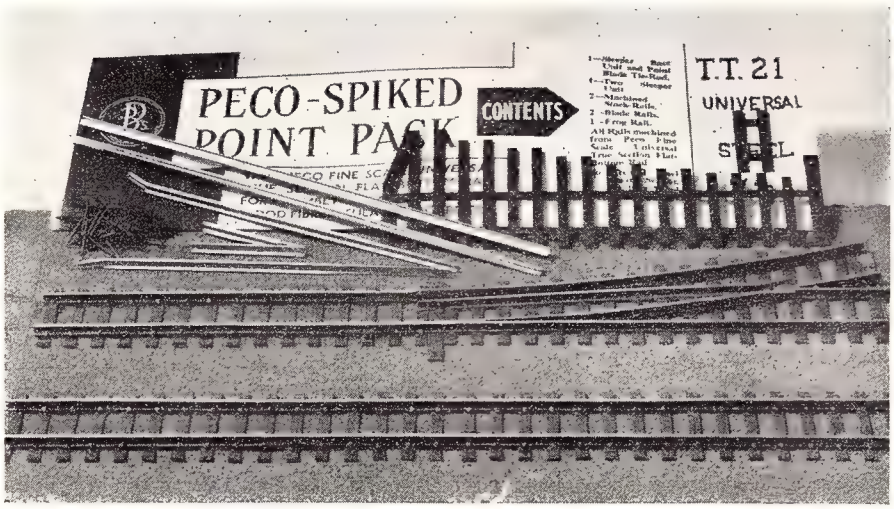
To return to our large plan, while simplifications have taken place we have still managed to keep to the general layout, and have provided enough tracks to enable a reasonable facsimile of prototype operation. Moreover, the quadruple-track main line is arranged in the form of a spiral, so that there is no difficulty in running trains over all the extensive main line before they are brought to a halt; yet despite the apparent complication the layout can be built in stages so that something can be running in a short time. We would suggest that as a start either the old station and the Midland loop or one of the pairs of main lines be built, preferably the former, as construction from the outside seems to us to be the simplest proposition.

Coming now to simpler matters, there will undoubtedly be a call for " TT-3 " layouts to suit small baseboards. Here caution is vital, for while it is possible to reduce a " OO " layout by twenty-five per cent, it is advisable to see whether, in order to squeeze the layout into a fixed area, the original plan has not been unduly cut down in the first instance. A great deal of ingenuity has been expended in the past few years in eliminating all but the barest essentials from a " OO " layout so that it can be built at all, with the result that the small-space station can only just hold the minimum stock needed to work the service. While this is better than nothing at all, it still falls short of what is truly desirable.

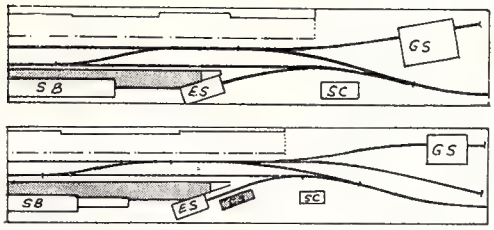
If we look at the problem of the small-space layout from first principles, we realize that here more than anywhere else the size of the baseboard is the governing factor. We cannot increase it; there is no advantage in reducing it. If we look at a minimum-space " OO " layout, we find nothing wrong with the arrangement of tracks in themselves; it is rather that they are too short, and the siding space is barely sufficient. In most cases the same layout replanned in " TT-3 " can be just as large, the reduction in scale ensuring that the facilities for operation are improved.

The small plans show, on a 5ft. x 1ft. baseboard, a self-contained terminus, that is to say a layout which permits all shunting movements to take place on the main baseboard, without use of the main line as a shunting neck. The first plan shows the arrangement in " OO," where, though practicable, the limitations are severe. The second plan, in " TT-3," keeps all the points in relatively the same positions, except, of course, that crossovers are considerably shorter, with a much-needed second goods siding.

" TT-3 " can offer more in a given space, or give one a layout in an incredibly small area, but it also permits closer approach to true-scale modelling.

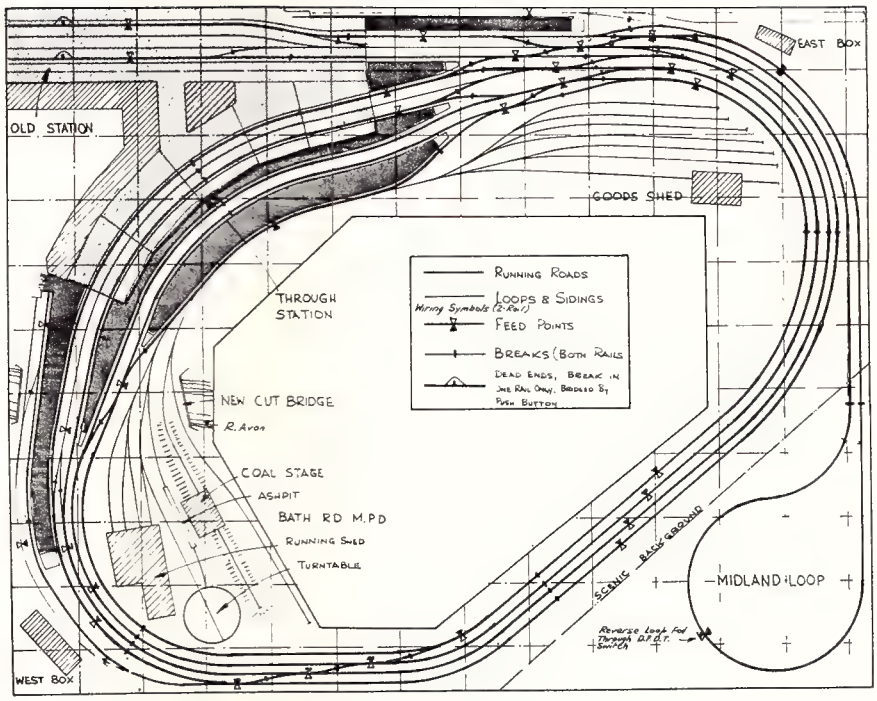


PECO " TT-3 " SPIKED TRACK assembled, and the parts of a point kit laid out against the instructional packet.



Right : plan for a " TT-3 " layout, based on Temple Meads, in a 10ft. x 8ft. room. Each square represents 9in. square in " TT-3," or 12in. square in " OO."

Above : two scales on the same 5ft. x 1ft. base to show comparison between " OO " above and " TT-3 " below.



OTHER PRODUCTS

Apart from the track to which we have already referred, we have, as we go to press, been notified by Hamblings that they will also be producing their popular Bilteezi cards in 3mm. scale, and the initial range will be a factory, a tunnel mouth (three colours), suburban semi-detached houses, a modern bungalow, a stone cottage and a chapel. These sheets will in addition be useful for perspective modelling for 4mm. scale layouts.

There are, however, many existing items that are suitable for use with " TT-3 " models. Still on the scenic side, the smaller " OO " brickpapers can be used with complete confidence, as the slight overscale size of the brick escapes notice, the main object being to give the impression of a brick wall. Stone and cement block papers are, of course, quite suitable for the new scale, as there are no fixed sizes for these items. Indeed, anything which comes in differing sizes can be readily used. We can instance but a few ; notice boards, bridges, model trees and hedges spring immediately to mind.

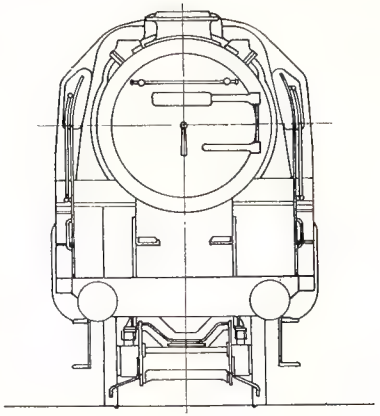
As Tri-ang motors run on 12 volts D.C., all standard power units and controllers and other electrical equipment can be used, including, of course, point motors. Lever frames are equally applicable, so for that matter are " OO " point levers, which are too large in any case, as they are intended to be worked by our very much over-scale fingers.

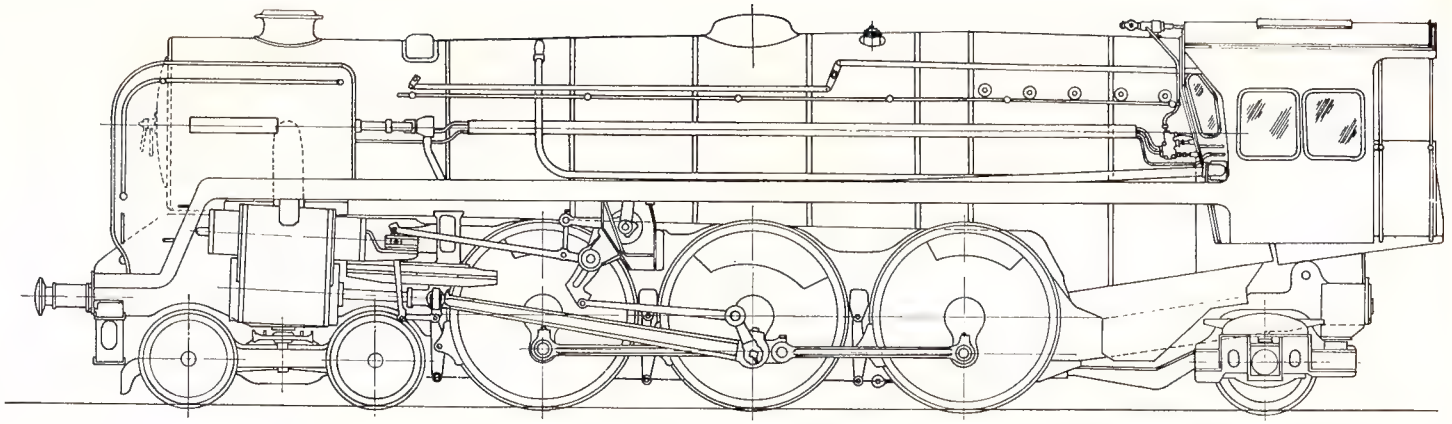
Outside the strictly model market quite a number of products which are virtually 3mm. scale are available in the toy trade. The " Matchbox " series, for example, contains quite a few road vehicles which would be acceptable to the smaller scale. The principal lack at the moment seems to be human figures, but we could suggest that as an experiment Slater's Huminitures could be squeezed while warm to reduce their height, and if necessary a little truncating of the legs and other slight—for model figures at any rate—trimming could be carried out to reduce the proportions. And, of course, to complete the layout, the standard scenic backgrounds manufactured by Basset-Lowke Ltd. and B. J. Ward Ltd. are just as applicable in " TT " as they are in " OO " ; indeed, in the smaller scale they cover even more scale feet.

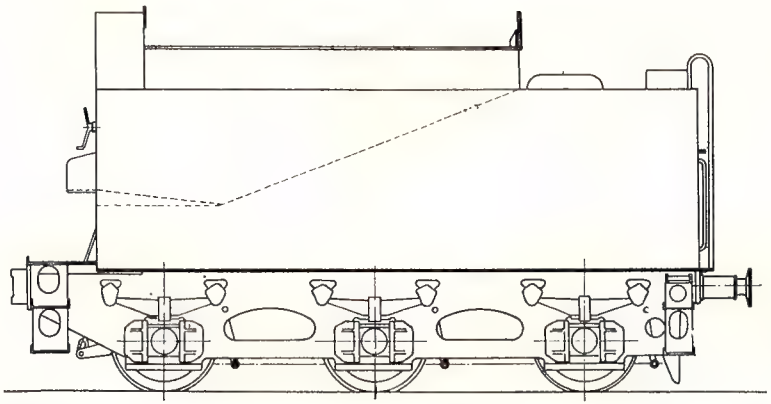
IN CONCLUSION

" TT-3 " is here and undoubetdly has many attractions and advantages, but let us in conclusion say that no one scale can ever be the be all and end all. This new size does not in any way alter the position of the established gauges ; indeed, we know of many new products pending in " OO," which it will be our pleasure to review in the near future. " TT-3 " adds to our scope and interest, and it brings main-line modelling within the compass of the moderate-size permanent layout or the large portable system. It offers additional facilities for operation as more complex layouts are possible in a given area. Above all it gives the scenic modeller a larger canvas on which to paint. The general picture of a " TT " system can be wholly pleasing, and may even be more satisfying because of better overall proportions than one in a larger scale, but individual models, particularly of locomotives and rolling stock, will undoubtedly suffer in comparison, just as the finest " OO " vehicles always seem lost against their " O " gauge equivalents. Therefore " TT " is just another scale from which to choose.

A selection of American locomotives by H.P. Products Inc. in " TT-25."





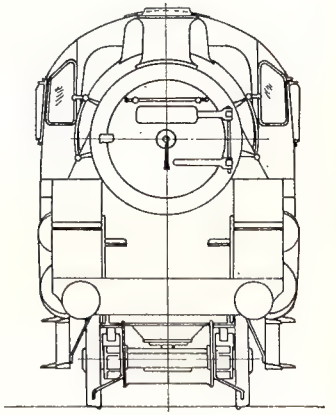


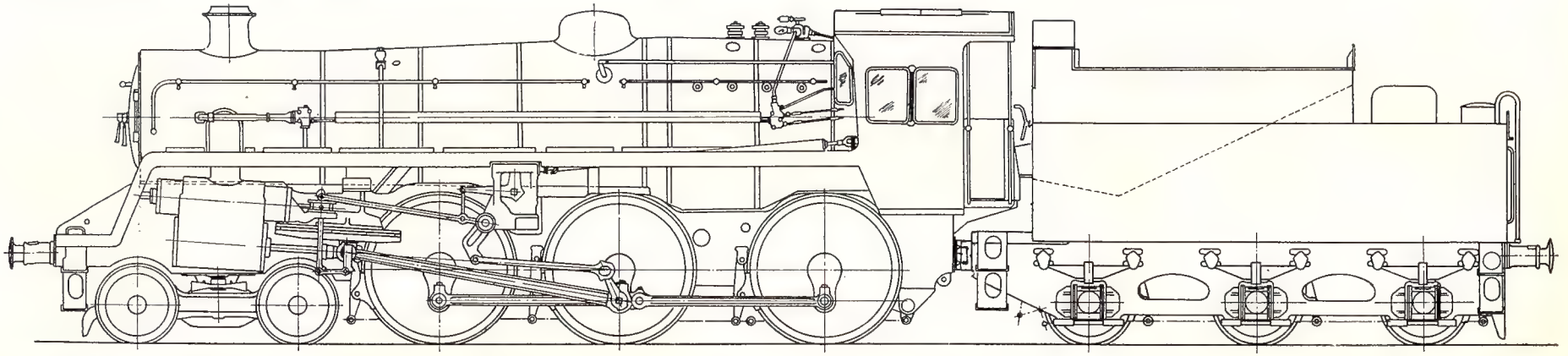
B.R. Class 6 4-6-2
"Clan"

Driving wheels 6′ 2″ dia.
Leading wheels 3′ 0″ dia.
Trailing wheels 3′ 3½″ dia.
Tender wheels 3′ 3½″ dia.
Wheelbase and overhang :
Loco 5′ 0″, 6′ 3″, 5′ 6″, 7′ 0″, 7′ 0″, 10′ 0″, 3′ 4″.
Tender 4′ 6″, 7′ 0″, 7′ 0″, 5′ 6″.
8″ between loco and tender.
Length overall 68′ 9″.
Boiler pitch 9′ 2″.
Overall height 13′ 0½″.
Overall breadth 8′ 8¼″.

B.R. Class 4 4-6-0

Driving wheels 5′ 8″ dia.
Leading wheels 3′ 0″ dia.
Tender wheels 3′ 3½″ dia.
Wheelbase and overhang :
Loco 5′ 0″, 6′ 3″, 5′ 6″, 7′ 0″, 8′ 0″, 5′ 1″.
Tender 4′ 6″, 6′ 6″, 6′ 6″ 5′ 0″.
8″ between loco and tender.
Length overall 60′ 0″.
Boiler pitch 8′ 9″.
Overall height 13′ 0″.
Overall width 8′ 9½″.

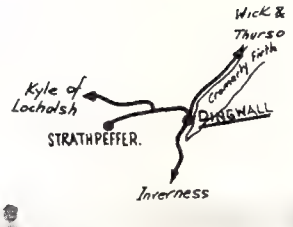




Prototype of the Month

DINGWALL

by J. A. Patmore

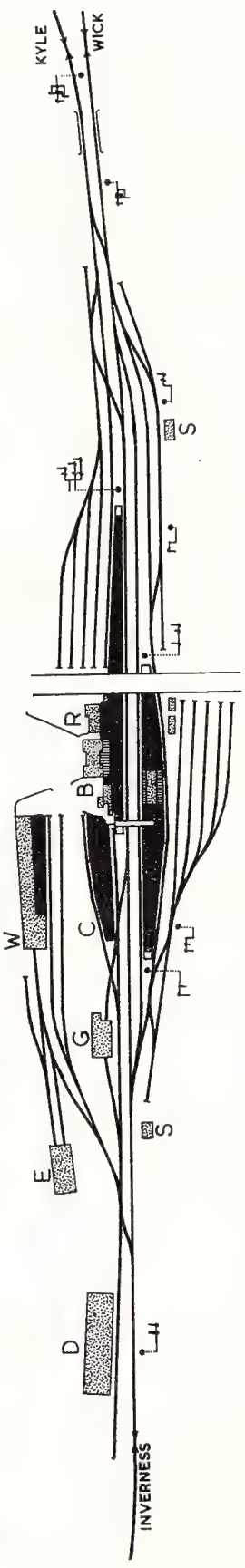


Approach side of main station building.

The old Highland Railway has attracted far more attention from enthusiasts than its size alone warrants. No doubt much of this is due to the romantic nature of its long single-track main lines winding through the heart of the Highlands, and its very individual character, much of which has survived through the years from the grouping, even when Stanier class 5s handle the bulk of the traffic. The accompanying photographs and plan of Dingwall are offered in the hope that they may interest those actual or would-be modellers of the Highland, as well as offer one or two ideas on layout to all who are interested in having a fair-size single-track junction.

KEY TO LAYOUT DIAGRAM

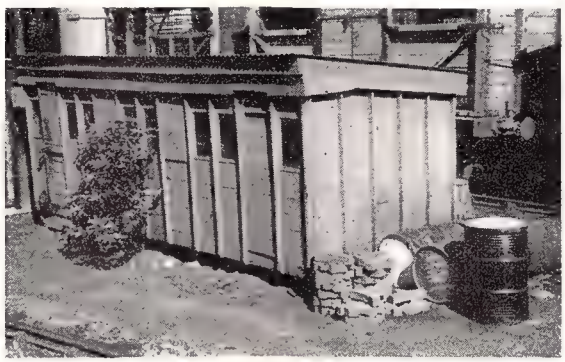
- B Station buildings.
- C Cattle dock.
- D Distillery.
- E Engine shed.
- G Goods shed.
- R Refreshment rooms.
- S Signal-box.
- W Warehouses and store sheds.



Platform side of refreshment rooms.

Station buildings, down platform.

Signal-box, Inverness end of station.



An old rib-sided coach in use as a shed.

JUNIOR MODELLER

THE LITTLEMOSS BOYS' SCHOOL LAYOUT

The accompanying photographs show various views of the club's Hornby-Dublo layout, which was constructed out of the profits from our first exhibition in 1953.

This layout was built as simply as possible. It is on a baseboard 6ft. x 4ft., which has folding legs, thus making it easy to transport. There is double track about two-thirds of the oval, with single-line working under Farm Hill tunnel as far as Sharp Turn bridge. A siding leaves the main track to serve Hillsboro' goods yard, just below Sharp Turn bridge.

Hillsboro' is a small imaginary town situated on the Scottish side of the border, which prior to nationalization was served by the L.M.S. and the L.N.E.R. It is thereforefore not unusual for spotters to bag "Duchesses" and A4s, besides a stray N1 or a standard 2-6-4T.

The electric arrangements are simplicity itself, the only wires being those which carry the "juice" to the rails. The five sections are taken care of by hand isolating points and isolating tabs.

Three trains can be run over the system, one at a time owing to the single-line working through the tunnel.

The timetable usually features an express, a local passenger train and a pick-up goods. To work these we have two "Duchesses" (Atholl and Montrose), a "Nigel Gresley" (in L.N.E.R. colours), an 0-6-2T and a 2-6-4T. All these locos are on loan from members, as is also the rolling stock.

The buildings are made from Bilteezi sheets reinforced with balsa wood, with the exception of Hillsboro' goods shed and Sharp Turn bridge. These were made to the plans of two of our members. The backcloth was also painted by one of the boys. He has lately become critical of it and has painted us a new one which is really "super."

This is the second layout built by the club. The first layout was a two-rail universal layout 10ft. 6in. x 5ft. 3in. This layout had to be dismantled when we transferred to our new building, because of lack of space. However, we now have excellent quarters and are busily engaged on our third layout, a two-rail scale layout to 16.5mm. gauge. This layout is in the form of a dumb-bell, with a central station backed by a flyover, connecting the two "turn-rounds."

We are hoping to have this layout ready to run by the time we put on our next exhibition, on March 15 and 16, 1957. I have no doubt about our ability to complete the task in time.

Our first layout was built in six months, the Dublo layout illustrated in about eight weeks and a present scheme, which will have an overall length of 32ft. and involve the laying of six points and about seventy yards of track, we have to finish by March. It is hoped to send you more details of this track at a later date.

The question you must be asking is "How do you finance the club?" Looking back, I wonder too! But briefly this is what we have done.

In October 1953 we had a first meeting. There were twenty present and we decided on a weekly subscription of threepence each. We also gathered jam jars, scrap metal, woollens, etc., which we exchanged for cash. In addition we have run three exhibitions. The profit from our first was about £3, our second made us £8 and our last one (which was insured for £1,000!) augmented our funds by just over £21.

Our finances are now down to the last £2, but we are hoping that our next exhibition this coming March will break all records.

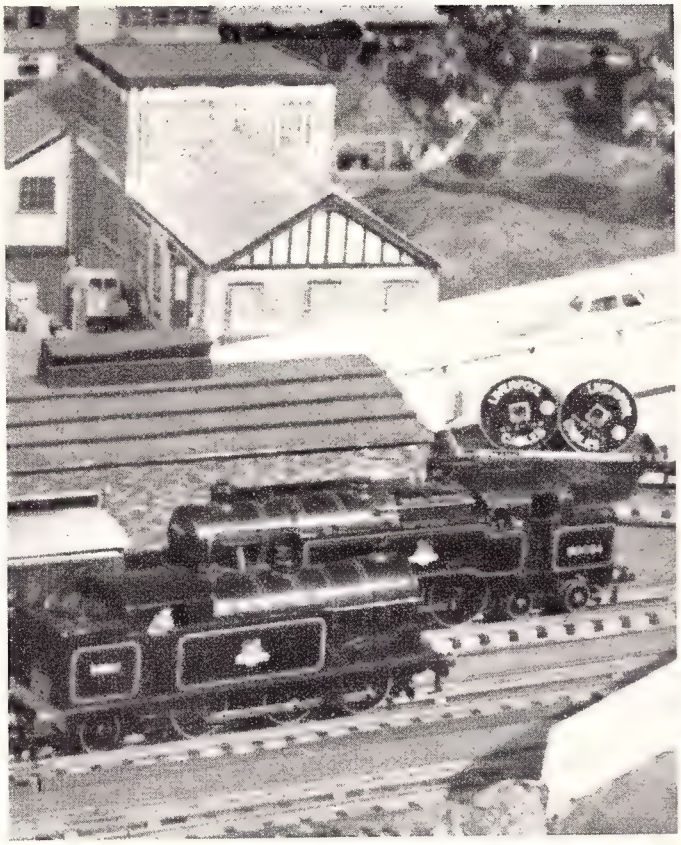
The Manchester Model Railway Society is again helping us by sending along its famous tramcars and the new "Dog Track" designed and constructed by those two arch-modellers Jim Edgar and Syd Stubbs.

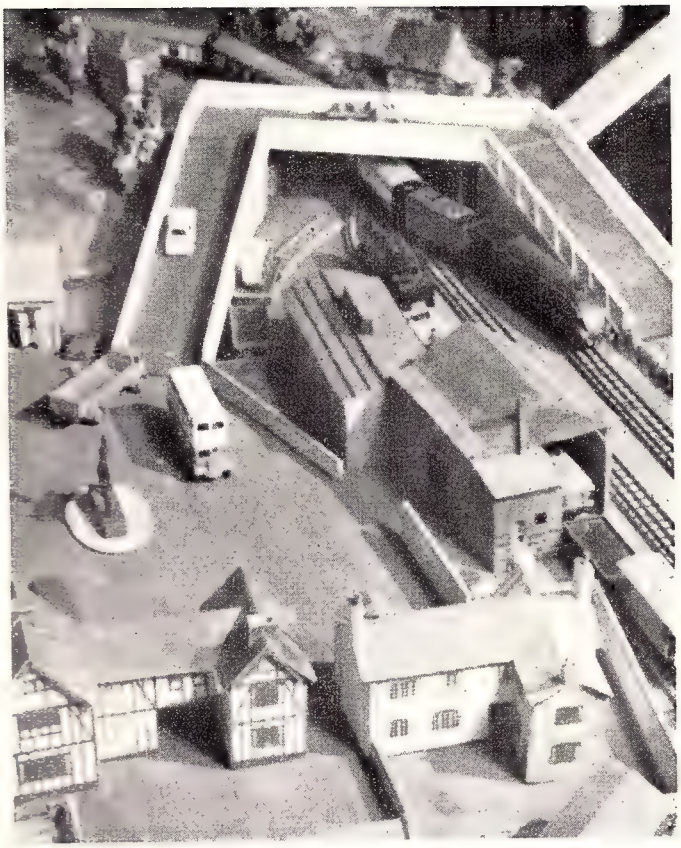
We are also hoping for support from other modellers in the district and feel confident of an even bigger and better show this year.

I hope this article will give encouragement to those who are "thinking it over." My advice is "Go to it!"

J. LAWTON (Secretary).

Photos by J. Webster of Fairfield, Manchester (secretary of Droylsden Photographic Society).

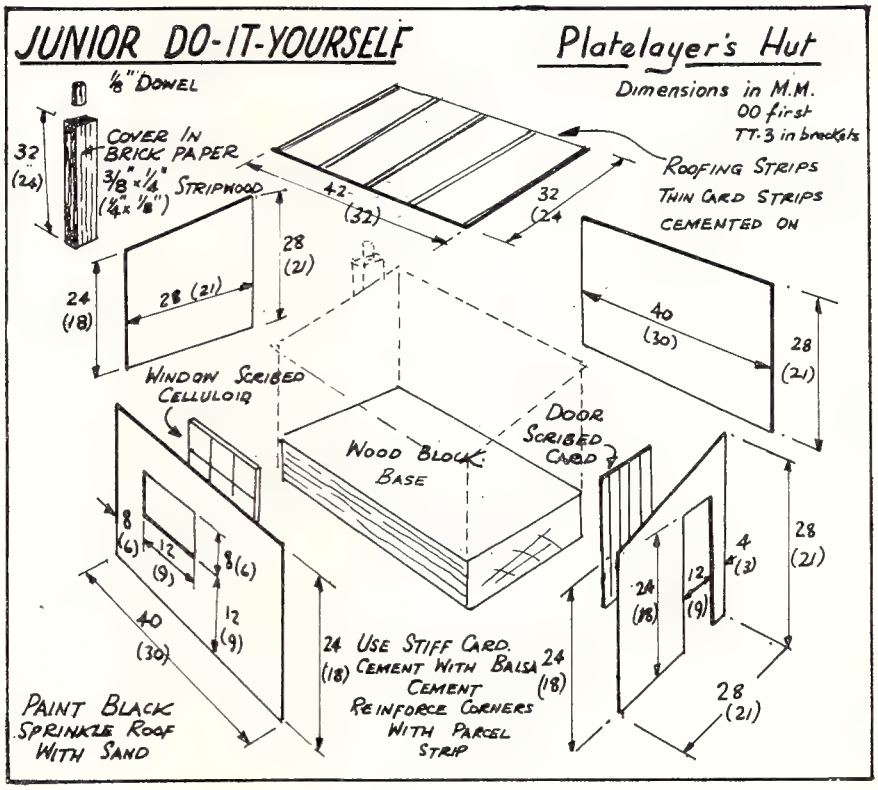




Facing page : Prince Charles Square, Hillsboro'.

Left : Hillsboro' siding.

Right : aerial view of Hillsboro', with "Sir Nigel Gresley" negotiating Sharp Turn junction.



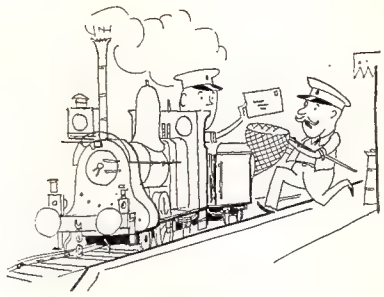
Junior Book Review

LOCO DRIVER, by Eric Leyland (Edmund Ward, 8/6).

This is the second in a series of books describing the work of "Men of Action," which sets out to give the younger reader a clear picture in simple but accurate words of what the job involves. This book takes us from Euston to Carlisle on the Stanier Pacific "Coronation," describing the work involved in preparing the locomotive for the road, when opportunity is taken to explain the construction and working of a modern express engine, and then showing what the journey involves. Signalling, water troughs and mail pick-up are dealt with, and the book concludes with a useful chapter explaining how locomotive drivers are trained and the steps the young enthusiast should take in order to select this career.

We feel sure that all our younger readers will thoroughly enjoy this excellent book.

READERS' LETTERS



A free-for-all forum of ideas and opinion.

ASSISTANCE WANTED

The middle-aged owner of a 4mm. Highland Railway at Oxted, Surrey, who has plenty of room, track and locos but very little time to develop them, would welcome help in both construction and running by enthusiasts who may not be able to have lines of their own. The greatest need is in scenic, rolling-stock and signalling departments, but any intelligent help is acceptable. A special welcome will be given to those who refrain from mentioning diesels or electrics, and who believe that railways virtually ceased about 1922!

M. D. ENGLAND.

"Aros," Limpsfield, Oxted,
Surrey.

SWITCHES

With reference to Mr. Neil Simmer's letter (page 18 January RAILWAY MODELLER), after many years of experience in the professional radio and electronics industry I would not recommend the use of the Bulgin switches he suggests for model railway work. I myself have tried the very type proposed as a reversing switch on my own model railway, and have had continual trouble with faulty contact. I have also had similar trouble with the same range of switch when used on a car for various items of auxiliary electrical equipment which have been added since the car was new. This also is a 12-volt circuit.

These switches are quite satisfactory on mains voltage circuits, but the absence of any wiping action on the contacts soon leads to a fairly high resistance circuit, which cannot be tolerated on a low-voltage system. I suggest that railway modellers will find more satisfactory components in the range of switches made by such firms as Arcolectric Ltd., Painton Ltd., and British N.S.F., which are also available from many radio and electrical dealers. I have no connection with any of the four firms named, except as a user of the products of all of them, but rather than upset my own very cordial relations with Messrs. Bulgin by public criticism of their products I will enclose my name and address and sign myself.

Chelmsford. ELECTRONIC ENGINEER.

"NOISE"

May I have an opportunity of briefly thanking those who kindly replied to my letter about noise? The use of plasticine and light graphite grease are ideas quite new to me which I am sure will be effective.

With regard to the remarks of Mr. J. K. Davies on precision in the mechanical assembly, my experience is that this does not always eliminate noise. An early loco of mine which was rather sloppily assembled was one of the quietest I have had, but this was, of course, the exception which proved the rule that one is far more likely to secure good results by using precision methods.

I wish far more people bothered about noise, then we should probably get less noisy gears and motors. Several people have referred to the silence of the new Triang motor, which shows that it can be done.

Belfast. REV. E. STANLEY PETERS.

AN APPEAL

I should like to meet one or two keen enthusiasts over twenty-one who would join with me in operating my large scale "OO" layout and carry out further extensions. It is too big for one to handle and I hope to find someone who has no layout of his own and would welcome the idea of joining in with me.

R. W. MERRETT.

83 Lode Lane, Solihull,
Warwickshire.

PROVOCATIVE IDEA

How right Mr. P. D. Hancock is with his "provocative idea" in the January issue. My railway room is only about twelve feet by nine feet, yet it houses a 7mm. double-track continuous circuit with a reverse loop, and although it has just grown up and developed from a single-line oval it now falls into the category of the small-size large-scale system with the object, as Mr. Hancock remarks, of eventually having a limited amount of stock (in use at one time, at least) of good detail, and the whole railway in keeping. It is far from complete, but personally I am well pleased with the position, and *much* prefer it to a 4mm. system in the same space. The general effect—views, noises, etc.—is much better in 7mm. in my opinion, and I *can* run a fast non-stop express over this system with plenty of sound effect. It is quite an exciting job to keep the road "made" for her as she threads her way over the entire system if desired and it can keep *one* operator on his toes. If there is a derailment, it is usually the fault of the signalman, but I can tell you that such a layout will oblige the owner to have his trains and trackwork in pretty good working order and condition.

Of course, it is possible to use 4mm. track as a light railway, building locos and stock to 7mm. scale, and it can be as much or as little free-lance as desired, but I always think it is impossible to achieve the full-blooded railway effect in this type. I have also a light railway rigged up in two portable sections, and if I had to choose between this and a 4mm. railway I would have the light railway every time. One at least feels in the swim of the bigger scale, and linked to it very sensibly, and in the event of having to use this only it would be preferable to sitting gazing at 7mm. models and making endless unattained plans.

Co. Wicklow. M. K. HUGGARD.

"TAXIS"

I would like to echo the call of your November RAILWAY MODELLER correspondent Mr. F. G. McCaughey for taxis. For several years now we have been shouting for "OO" scale taxis, for what railway station is complete without a taxi rank, even though at small branch stations the rank may consist of one humble vehicle? Could not, for example, Mr. E. B. Leng, whose 7mm. scale taxis are excellent products, make these also in 4mm. scale?

A few years ago Meccano Ltd. produced exceptionally good (approx.) scale models of the more old-time taxi cabs in their "Dinky Toy" series. These were very well detailed and complete even to a driver and a fare-meter. They were painted black and red with silver "trimmings."

To the best of my knowledge these are not now available, so it looks as though modellers like Mr. McCaughey and myself will have to continue calling "Taxi!"

Tring. K. EDWARDS.

LINING COACHES

This is an idea I have tried and found successful for the rather awkward job of lining coaches. I cleaned a piece of $\frac{1}{8}$in.-thick aluminium sheet about 12in. x 4in. with a fine sandpaper, and stuck on full length with about $\frac{1}{2}$in. overhang at both ends four strips of $\frac{3}{4}$in.-wide Sellotape and gave them two coats of gold or yellow paint (as desired), and when dry stripped off very fine strips with a razor blade and steel rule, and by holding the $\frac{1}{2}$-in. overhang stuck them on to the model in the required position. The tape comes off cleanly as it is on a non-absorbent surface, and has plenty of adhesive left for the job.

London, N. 2. J. LOVEDAY.

WEST SOMERSET MINERAL RAILWAY

In reply to Mr. Moore (RAILWAY MODELLER, January 1957) regarding the West Somerset Mineral Railway, I got out my tricycle, disentangled my beard from the handlebars, and got cracking on the following "gen."

Opened March 31, 1862, on the broad gauge. Engineer, the redoubtable Brunel, almost his last railway venture. It was operated by the Bristol and Exeter Railway with broad-gauge saddle-tank 4-4-0 locos painted black and numbered from 47 to 52. These engines were by Rothwell

and Co. Coaches on the excursions to Bristol from Watchet were B. and E.R. standard four-wheelers painted chocolate and cream, and wagons were an assortment of G.W.R. and B. and E.R. painted dark brown. Source of the above information: McDermots *History of the G.W.R.*, pp. 163, 173, 618.

The total extent of this line was 14 miles 48 chains (to Norton Fitzwarren). On the collapse of the iron-ore market the line was closed and the little town of Brendon, which the railway founded, was deserted and the buildings were pulled down.

The railway was reopened in 1907 on the standard gauge, again using locos of the 4-4-0 type, this time Beyer Peacock tank engines from the London Metropolitan Railway, the well-known cabless condensing engines painted green, claret and black and lined in orange. One coach also was used from the same line in London, in its original teak finish. Wagons were mustard colour and lettered "BIG-WIW." Whatever that stood for I cannot say! It could be B.G.W.W., the "I's being the vertical strapping of the drop sides—the photograph I have does not make this very clear. Source of the above information: Protheroe's *Railways of the World*, published 1912 by Routledge (now out of print, but doubtless Exeter public library would obtain a copy), pages 466-467.

I wish Mr. Moore the best of luck in modelling this line. It is something unusual, especially if he does it on the broad gauge. Even if he does it on the narrow gauge it will be nice to see a working model of one of the old Metropolitan "steamers" doing a useful job. There are few models of these locos about. I personally have never seen one, but I have seen models of the original broad gauge saddle-tanks.

Northampton. F. J. ROCHE.

WONDERFUL WAGONS

For some considerable time I have wanted to try a Wonderful Wagon kit, and this Christmas gave me the opportunity, as I purchased one for my son, who is (hon.) managing director of the little-known "Connor Railway."

When I had given it to him on Christmas morning (with strict instructions not to open it, as he might lose some of the bits and pieces) and I had taken it back again for assembly I spent a few hours enthusing on the amount of detail and the natty way the "springs" and buffers worked. At last my wife suggested that I got on with the job of making it. Needing no second bidding, I disposed of the last piece of Christmas pudding and moved into the workshop, i.e. I pushed back the table-cloth. As I was so busy my wife had not the heart (or neck) to suggest that I could help her with the washing up. Some sixth sense told me her feelings, however, and I persuaded my son, the managing director one, that as I was doing a job for him it was only right and proper that he should help with the washing up. I think I convinced him.

The job of assembly lasted just long enough to prevent me helping to get tea ready, but the finished article was worth all the sour looks I received. Never have I seen a kit of parts which would enable an absolute amateur to produce such a grand wagon. Truly you have aptly named the kits, for, after all, they are—wonderful.

Redhill. E. P. CONNER.

SOUTHERN MODELS

I feel that I must write in support of Mr. J. Harrison's plea regarding the supply of S.R. items by commercial suppliers, but I would add in all fairness that it is only in motive power that I find the suppliers so sadly lacking. Mr. Boyd Carpenter is quite right in so far that his reply relates to steam coaching stock and multiple electric sets only, but it does not help with locomotives, and I believe that this is the crux of the problem as far as most "Southern" fans are concerned. I know that it is more anyway. On perusal of the pile of catalogues I have purchased at considerable cost (I am still with you Mr. Harrison!) I find the following locos listed. Some are in kit form, some are ready constructed and some are makes which are easily altered to bring them to scale.

L.M.S.: in kit form 5.X.P., 5.P., 5.F., 6.P. "Royal Scot," 0-6-0 4F, 4-4-0 compound, 0-4-4 T2.P.; in ready-built form, 0-6-0 4.F., 0-6-0 T3.F., plus the proprietary locos.

G.W.R: in kit form, "King," "County," "Hall," "Prairie" 5101 class, 0-6-0 pannier 5700 class; in ready-built form, pannier 0-6-0 5700 class.

L.N.E.R.: in kit form, B1 4-6-0, J39 0-6-0; in ready-built form, the proprietary locos 0-6-2T and 4-6-2.

S.R.: in kit form, "Nelson" 4-6-0, "Schools" 4-4-0.

As far as I can ascertain, the last two locos are the only representatives of the S.R. Presumably the suppliers have scrapped all S.R. goods and tank locos without the knowledge of the locomotive superintendent concerned!

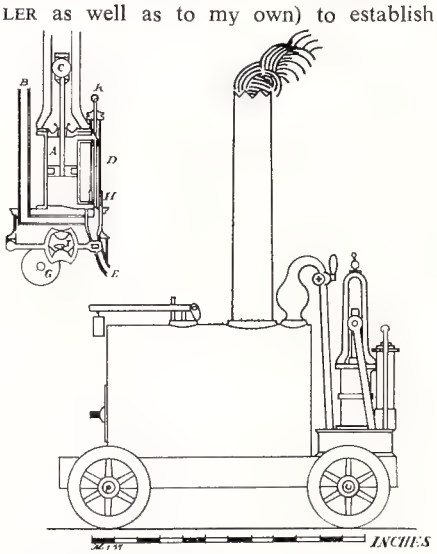
I think this sums up the position as impartially as possible under the circumstances, and the list speaks for itself. I personally prefer operating to building locomotives, which means getting something running fairly quickly, and, if Mr. Boyd Carpenter will forgive me, not multiple-unit stock only!

Gillingham. N. E. KEEL.

THE FIRST LIVE STEAM MODEL?

Many people have some little personal line of investigation which may or may not have some connection with their pet hobby. It may follow any course from an effort to travel over every inch of a B.R. route to going through the calendar on motor registration marks. These little side-lines are usually undertaken with the knowledge that they will probably never be fully realized; and so it was with mine, for I kept my eyes and ears open for references to the earliest model locomotive.

For many years I found no evidence of anything earlier than Spooner's garden railway (*c.* 1868), with its locomotive "Topsy," and had almost assumed that it qualified for the title of "the first," but my complacency was shattered recently when reading a bound volume of the parts of *The Glasgow Mechanics Magazine*, for it contained a delightful steel engraving and a full description of the wonderful model illustrated. The magazine is unusual in not dating its issues, and although the binding date is given as 1839 it is possible to extract conclusive evidence from the content of the volume (to the satisfaction of the Editor of RAILWAY MODELLER as well as to my own) to establish



the date of this issue as the latter part of 1824 or early 1825.

The steel engraving is unsuitable for modern reproduction methods and the line drawing has been prepared from it. The complete description is too long to quote in full, but the following extract is well worthy of reproduction:

"The following is a brief description of a model . . . lately added to the apparatus of Anderson's Institution for the purpose of class illustration.

"When the engine is to be set at work, the furnace is charged with ignited charcoal, which soon raises enough steam* to make the carriage travel off with a number of loaded wagons behind it, round the lecturer's table, on a circular road, eight feet in diameter.

"I am, yours, etc.,

"Anderson's Institution. "J.C.

*The pressure here employed is 30 pounds to the square inch."

To which the editor adds:

"The above is a short description of the beautiful model of the locomotive steam engine, which performed its part so admirably at the lecture given by Dr. Ure for Mr. Cross's children. . . . We are indebted to the maker of the model for this account of it. . . . We understand that he intends to construct an engine on the same plan, to be only three inches in length. This will be unquestionably one of the eighth wonders of the world."

The model is quoted as being ". . . only five times larger than it is in the drawing, which would give it a length of 15in. a height of 19⅜in. and 10⅜in. wheel centres.

In a pencilled note the father of the owner of the volume identifies J.C. as James Cook, who had a workshop in Cook Street, Tradeston, and adds that there was no trace of the model in the Institute in 1894.

Having discovered a model locomotive which predates the "Rocket," I am now free to undertake some new line of incidental research!

WAYFARER JUNIOR.

Personality Parade, No. 63

The Castello Gang

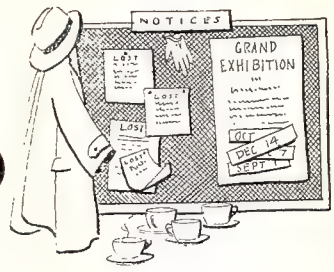
Our photo this month features two members of the famous—or should we say notorious?—Castello Gang: reading from left to right, John Slater and Ian Yearsley. The third member, David Odabashian, is behind the camera, while a fourth, Mr. T. Timothy, is so elusive that no one has ever seen him clearly though from time to time he receives mail.

The gang is in fact Manchester's London colony, for members of the M.M.R.S. who are exiled in the metropolis have so far taken up abode in a boarding house in Putney, where the landlady tolerates their activities, which, in common with most modellers, involve the accumulation of many valuable relics which to the uninitiated appear to be junk.

Apart from their activities in the M.R.C., and from a distance in the M.M.R.S., the gang are stalwart members of the Talyllyn Railway Preservation Society. They have in addition founded the West of England Railway Preservation Society, having found a home for Bunglewick station when Graham P. Overton left London and abandoned it, not to mention forming working parties to visit Seaton to help him re-erect the W.E.R. It is further alleged that they are directors of many strange and slightly mysterious companies, the Moreandmore and Scarga, the West Caledonian and that most pushing of concerns the Sabden Treacle Mines, whose private-owner wagons are to be seen the length and longth of the country.

They remain, defiantly, bachelors.

CLUB NOTICE BOARD



NOTES AND NEWS

The North Middlesex Model Railway Club

All members are now concentrating on preparing the club's two- and three-rail layout for the annual exhibition, to be held in May.

All modellers in the Palmers Green district are invited to visit the club headquarters, Lacey Hall, Hazelwood Lane, any Wednesday evening between 7.30 and 10.

Particulars of membership from Mr. J. A. Vincent, 48 Strafford Road, Barnet, Herts.

Model Railway Club

In January the club was treated to a very comprehensive talk on the L.N.W.R. by one of its members, Geoff Platt, who is also a member of the Manchester Model Railway Society. Photographs were shown on the screen covering the whole range of locomotives which worked this line from its inception in 1846 until it lost its identity in the amalgamation of 1923. Other photographs covered coaching and goods stock, stations, signals, signal-boxes and locomotive sheds. Many useful tips to modellers were given during the course of this most interesting lecture.

The club is looking forward to a talk from another member of the M.M.R.S. on March 21, Ross D. Pochin, whose craftsmanship in railway modelling is as well known in London as it is in Manchester.

The track night on March 28 will see the gauge "1" exponents holding the floor once again. The "OO" and "O" gauge tracks are packed away for this occasion and a considerable "mileage" of gauge "1" track takes their place. All three methods of propulsion—clockwork, electricity and steam—will be seen in action during the evening and visitors will have an excellent opportunity of seeing for themselves what can be done in this robust gauge.

Inquiries to the hon. secretary, Mr. D. A. Boreham, 10B Ealing Road, Northolt, Middx.

Furness Model Railway Club

The recently formed Furness Model Railway Club has been encouraged not only by the progress made with the construction of a big layout for exhibition purposes, but by the success which has attended two small exhibitions arranged by the club in aid of local churches.

The club was able to enter small model railways for these exhibitions, attract support for church funds, and draw attention to its own existence. Membership is now settling after a first flush of enthusiasm, and the club can count one member in Cyprus and another in the south of England! There is a simple explanation in that both men are in the Forces and their homes are in the club's area.

Major J. Hext (Coniston) has consented to be president of the club.

The club was hoping to complete its two-rail layout in time for a big exhibition in Barrow-in-Furness in February in co-operation with British Railways. Then there is to be an exhibition at Dalton-in-Furness and a start on a three-rail layout. Future plans include a possible model railway hobby show.

Macclesfield Model Railway Group

The above group has now been formed in Macclesfield to cater for "O," "OO" and "OOO" gauge railway enthusiasts. The group possesses its own clubroom in Duke Street, where it is planned to build a permanent "OO" two-rail point-to-point layout.

Any railway modellers in the area who are interested are asked to contact the secretary, Mr. K. Ball, 47 Springfield Road, Macclesfield.

Ilford Junior Railway Club

This club meets on Friday evenings at 7.30 at 36 South Park Drive, Ilford. Keen modellers, over 13 years old, are welcome. The club meets informally. It is a small group of railway and model railway enthusiasts who discuss their successes and failures, plan their modelling activities and share a good library of suitable books. Part of the club model was awarded a silver medal at a model engineering exhibition. Encouragement is given to members who like to build their own equipment, but the club does not limit its membership to experts. Full details can be obtained from Mr. Jack Nelson at the above address.

MARCH MEETINGS

Birmingham Model Railway Club
6—Epidiascope night. Members are invited to bring railway photographs.
14—Layout construction, 16.5mm.
20—Annual general meeting.
28—Layout construction, 16.5mm.

Bournemouth Model Railway Society.
1—"Prototype and models." Mr. R. B. Gossling.
15—"Railways of Switzerland." Mr. D. G. Yule.

Bristol 7-4-2 Club
1—"Signalling." Mr. H. J. Waycott.

Edinburgh and Lothians Miniature Railway Club
19—Question box.

Fylde Model Railway Society
5—Annual general meeting.
19—"Automatic coupling and uncoupling in 4mm. scale." Mr. N. Whitnall.
23—Society dinner.

Historical Model Railway Society
4—"Block working and single-line working." Mr. J. T. Howard Turner.

Hull Miniature Model Railway Society
7—Discussion on summer programme and public exhibition.
14—Track night.
21—Gradient climbing tests and operation night.
28—Track night.

Model Railway Club
7—Track night (L.N.E.R.) at Hammersmith.
21—"Modelling the Furness Railway," a talk by Mr. Ross D. Pochin at Caxton Hall.
28—Track night (gauge "1") at Hammersmith.

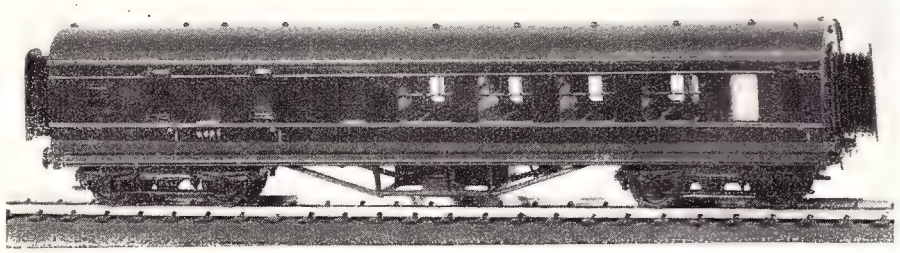
Nottingham Model Railway Club
5—Ladies' night.

Thames Valley Model Railway Club
15—Track night.

Wimbledon Model Railway Club
13—"L.B.S.C. Railway." Mr. G. E. Dimond.
27—Fifteen-minute talks by members.

TRADE WINDOW

A REVIEW OF NEW ITEMS SUBMITTED FOR OUR INSPECTION BY MEMBERS OF THE TRADE



EXLEY COACHES AND KITS, "OO" GAUGE
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The name Exley has been synonymous with coaches of quality for many years now, and we feel sure that few, if any, of our readers are completely unfamiliar with them. In recent months the entire range of "OO" coaches has been completely modernized in production design, resulting in a still further improved yet cheaper range with all types of coach available in two versions, the Zephyr scale coach and the Popular shortie for layouts with unduly sharp curves. Moreover, the coaches are available either as ready-made units or as kits, the latter being painted or unpainted.

As there are several varieties of each coach, available in several finishes and degrees of completion, ranging from a super-detailed internally fitted scale-length coach to an unpainted shortie kit, in both main line and suburban types, we cannot possibly list all the types here, but the manufacturers have prepared a simple list giving full details in tabular form. This is available on receipt of a stamped addressed envelope. In addition all the individual parts are available as spares.

The kits are delightfully simple to assemble; indeed, they are true "quickie" kits, which can be put together and sent into service in a quarter of an hour, and call for the simplest of tools—pliers and screwdriver—for their construction. The bogies have a special fitting to take the Peco coupling, Exley single-link couplings being fitted as standard.

The finish is of the traditional Exley high quality, and the price is more than reasonable.

VIKING FIGURES
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A welcome addition to the selection of figures for "OO" gauge model railways are the Viking figures illustrated above, for although they are strictly "HO" prototype people come in assorted sizes! Perhaps the most attractive thing about this series is that the majority of the figures are hurrying to catch their train, though one individual, who is busy reading his paper at the same time, may well fail to arrive. Standing figures are also available, but best of all is the tiny terrier, as miniature animals are all too rare. The men are particularly heavily built and dressed in raincoats, most have briefcases or papers, but one individual stands squarely with his hands thrust deep in his pockets. He may be merely waiting for a train, but with memories of *The Lady Vanishes, The Third Man* and films of like ilk we rather doubt it. These figures make a pleasing contrast in styles, as well as offering a slight change in height and build. We like them very much indeed.

TRI-ANG CATALOGUE

THE new Tri-ang catalogue has many surprises. Perhaps the most startling is the introduction of Southern Electric two-car sets (one motor, one dummy), which can be expanded into the standard three- or four-car formations with the addition of standard Tri-ang suburban stock, which is now available in green livery. A restaurant car is also introduced, while in the transcontinental range there is a diesel bogie switcher. The points are redesigned, with universal blades, but the most interesting development lies in the fact that the hand and electric points are identical except for the solenoid motor, which can be purchased as an extra and slipped into place. This is a most welcome innovation which allows the modeller to improve his layout by adding remote control at any convenient time.

BOOK REVIEWS

(*Continued from page 72*)

range of track and components, but is worthy of study by all modellers, who could doubtless find something of particular interest in its pages.

LOCOMOTIVES OF BRITISH RAILWAYS, L.M.S. Group (8s. 6d.).

LOCOMOTIVES OF BRITISH RAILWAYS, Southern Group (8s. 6d.).

H. C. Casserley and L. L. Asher (Dakers).

These books are perhaps the most generally useful locomotive registers we have yet examined, simply because every class mentioned is illustrated in all its principal varieties. There is a numerical list, which forms a contents list to the illustrations and effectively takes the place of a conventional index. As a result it is a very simple matter to find an illustration of any given class of locomotive in a matter of seconds.

As these books are clearly stated to be a pictorial record of the locomotives handed over to British Railways, together with a record of subsequent developments, they can be said to have carried out their appointed task admirably. The cost, moreover, is extremely moderate, as they are bound in durable, hard covers and fully illustrated. They form an excellent companion to the locomotive modeller, particularly one who is a trifle uncertain as to his future programme.

BOOK REVIEWS

STEAM LOCOMOTIVE, by O. S. Nock (Allen & Unwin, 25/-).

The study of the steam locomotive is a fascinating and timeless subject, which will certainly not come to an end when the last of this mighty breed ceases to run. Any book on this subject is certain to attract, but O. S. Nock's latest work stands head and shoulders above the average run.

It is a thing apart. Not since Ahrons's monumental work have we had a really forthright survey of the field, and while the comparison is implied in the similarity of titles, the main connection between the works is that both are eminently readable. In our opinion, *Steam Locomotive* will become a standard work, and should certainly be in the possession of anyone who sets himself up as a student of the steam locomotive.

The story begins at Rainhill and fades out in 1945, for Mr. Nock does not attempt to write finis, but rather implies, as all good story-tellers should, that some day he may take up the thread again. He considers, and rightly, that it is not enough to deal with the locomotives alone, and gives many short but penetrating glimpses of their designers as well as adding a few well-chosen snippets of general history to give a background to the events described.

In view of the high standard of the book, it seems rather surprising that while Mr. Nock has given full details of the North Eastern's A.T.C. gear he has omitted any reference to the extensive G.W.R. adoption of electric contact A.T.C. of the Hudd system, as these are the progenitors of the new B.R. system. As this is the second time he has done this, we are beginning to wonder if he has some good and proper reason, for we can hardly imagine that it is purely an oversight. We should really like to know.

ON ENGINES IN BRITAIN AND FRANCE, P. Ransom Wallis (Ian Allan, 25/-).

This excellent and eminently readable collection of footplate journeys underlines the difficulties that beset the observer of day-to-day operation on our railways, particularly if he travels on the footplate. Dr. Ransom Wallis states that the journeys he has made allow him to claim that his book represents present-day practice. Without in any way wishing to belittle a very fine book, we would point out that one journey cannot be relied upon to give a true picture. We are convinced that his single trip on the A.C.E. does not bear out our own experience of timekeeping on the Western division of the Southern Region based on several years' travel over the section. Moreover, we feel that Dr. Ransom Wallis is wrong when he implies that late arrivals are due to faulty team-work, for we believe they are caused mainly by the intense track occupation of British Railways. We can well remember our trip from Edinburgh to London during the railway strike, when, despite inordinate station times, excellent overall speeds were maintained simply because the driver was not running into the tail of the train ahead.

WRENN TRACKWORK (G. R. Wrenn and Co.).

This small but comprehensive booklet not only contains a complete catalogue of Wrenn track and associated components, but includes as well a selection of layout plans and instructions for wiring Wrenn track and hints on the construction of the layouts illustrated. It thus not only forms a useful, practical handbook for the "OO" gauge tracklayer who uses this popular

(Continued on page 71)

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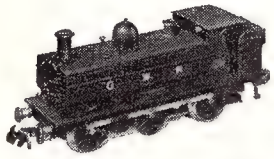

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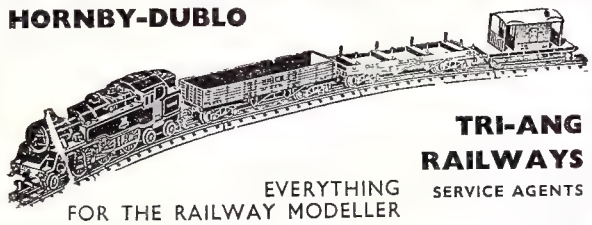

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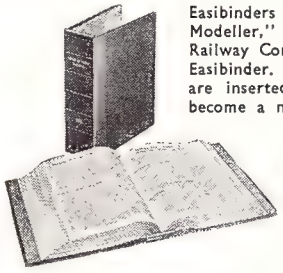

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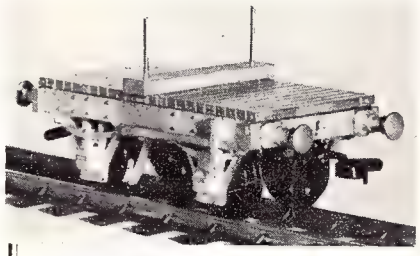

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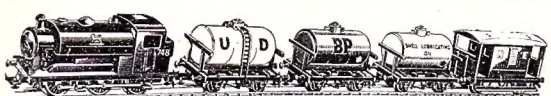

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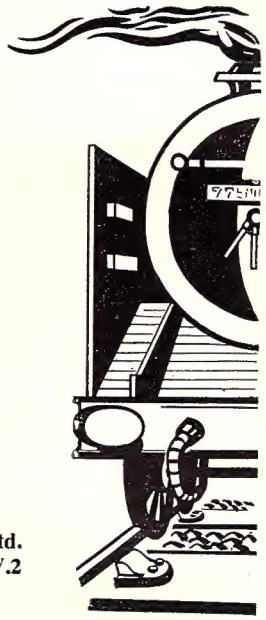

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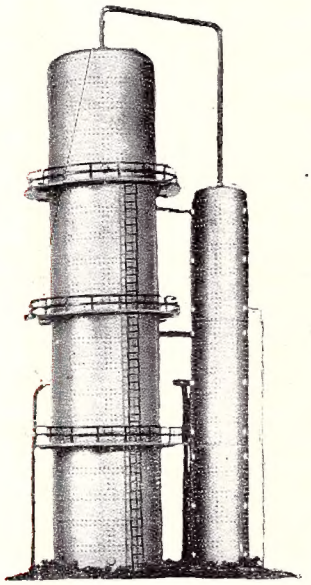

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